AEROSOL AGE

THE MAGAZINE OF PRESSURE PACKAGING

IN THIS ISSUE:

- Study of Shave Creams
- New Aerosol Contraceptive
- Cosmetic Spray Patterns
- Formulating Aerosol Powders
- The Problem of Communication

AUGUST, 1961

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THIS MONTH'S COVER

Bergdorf Goodman New York has introduced "Miss Bergdorf," "Nandi," and "Number Nine" (not shown) in a two-ounce Peerasol by Peerless Tube of Bloomfield, N. J. The collar unit, overcap, and decoration are by Virjune Manufacturing, Waterbury, Conn., with "B9-FC" valve and "AC4" mechanical breakup button by V. C. A., Inc. Fill is by Aero-Chem, Inc., Bridgeport.

AUGUST, 1961 VOL. 6, No. 8

AEROSOL AGE

The magazine of pressure packaging

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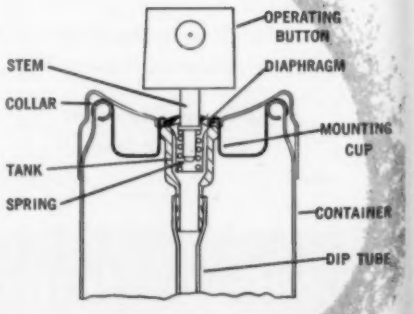

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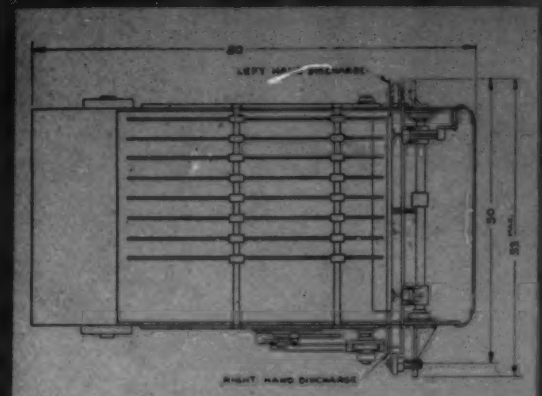

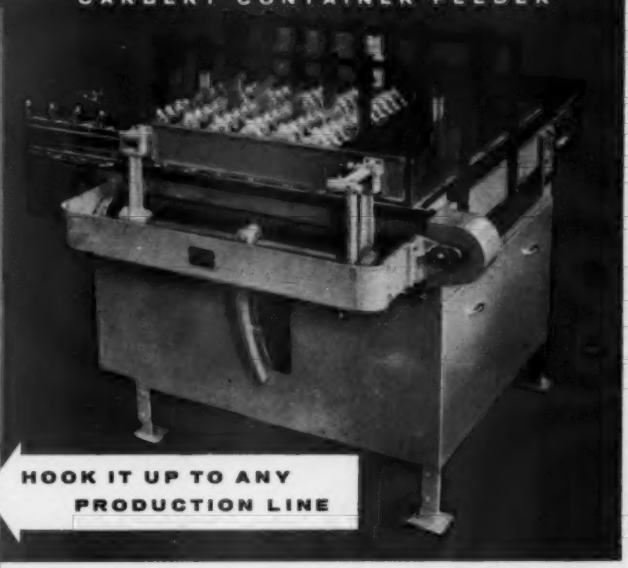

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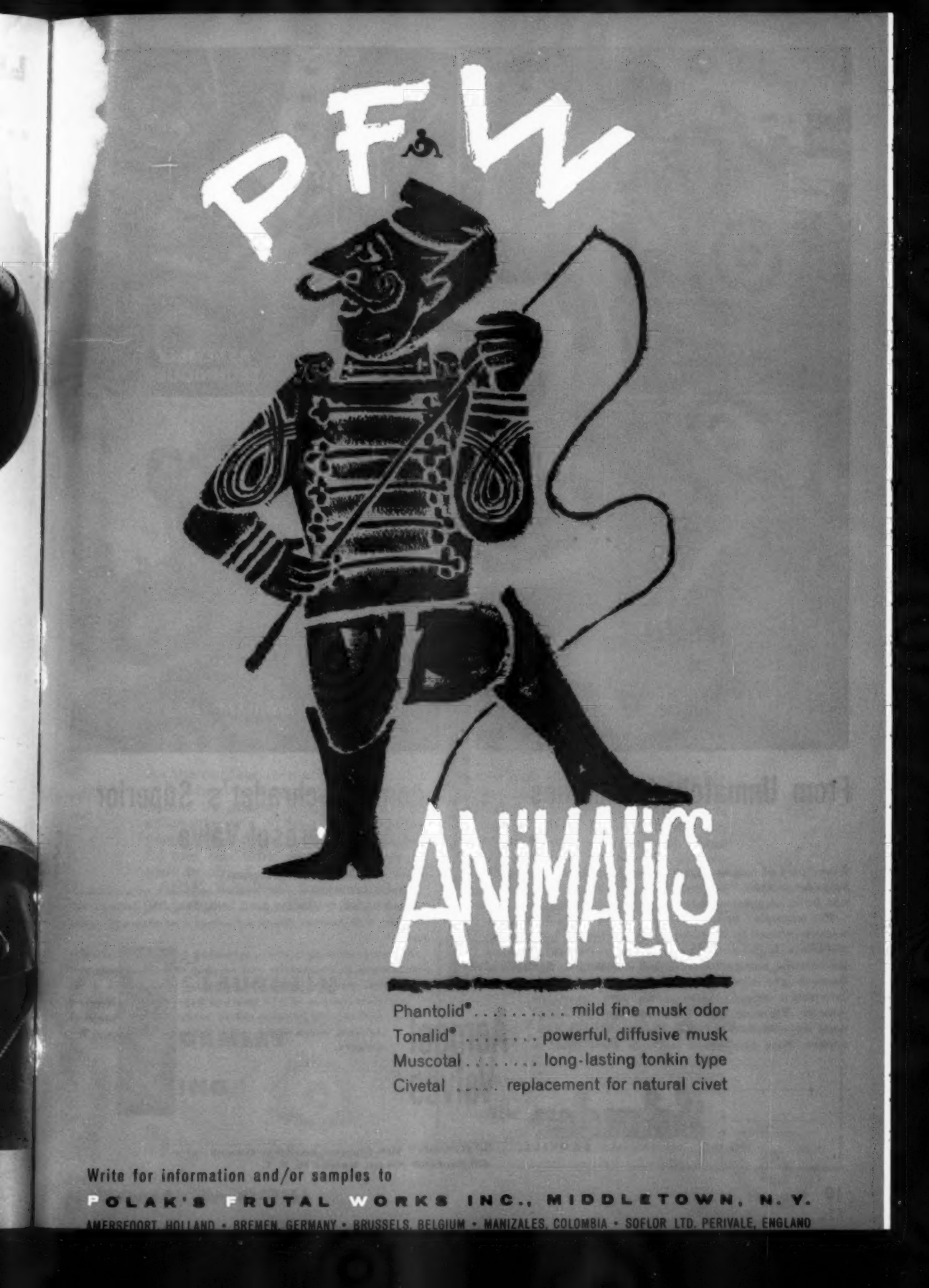
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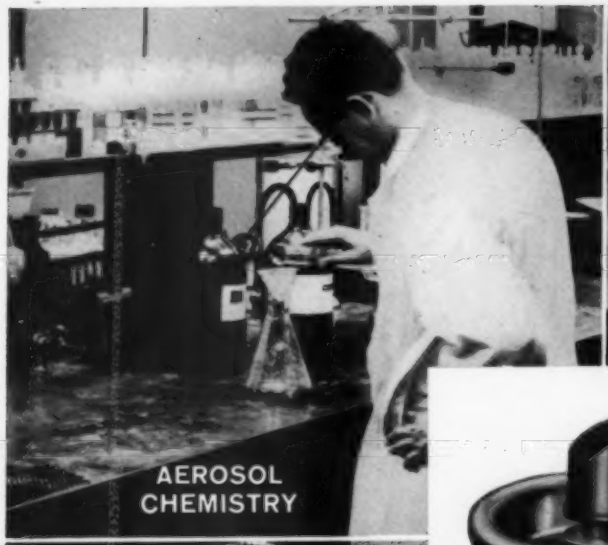

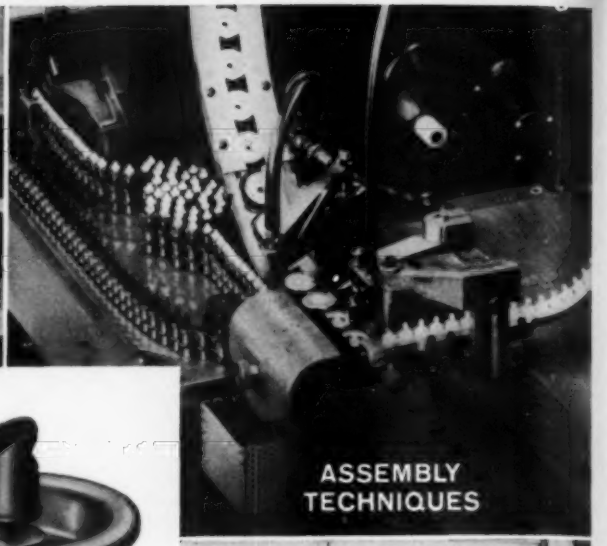

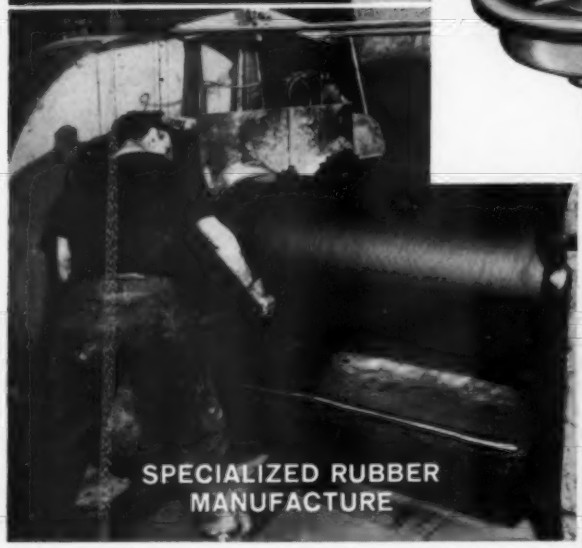

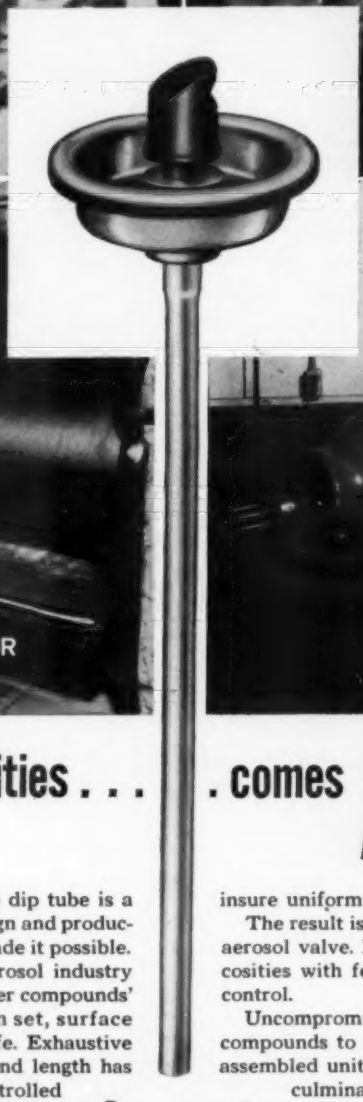

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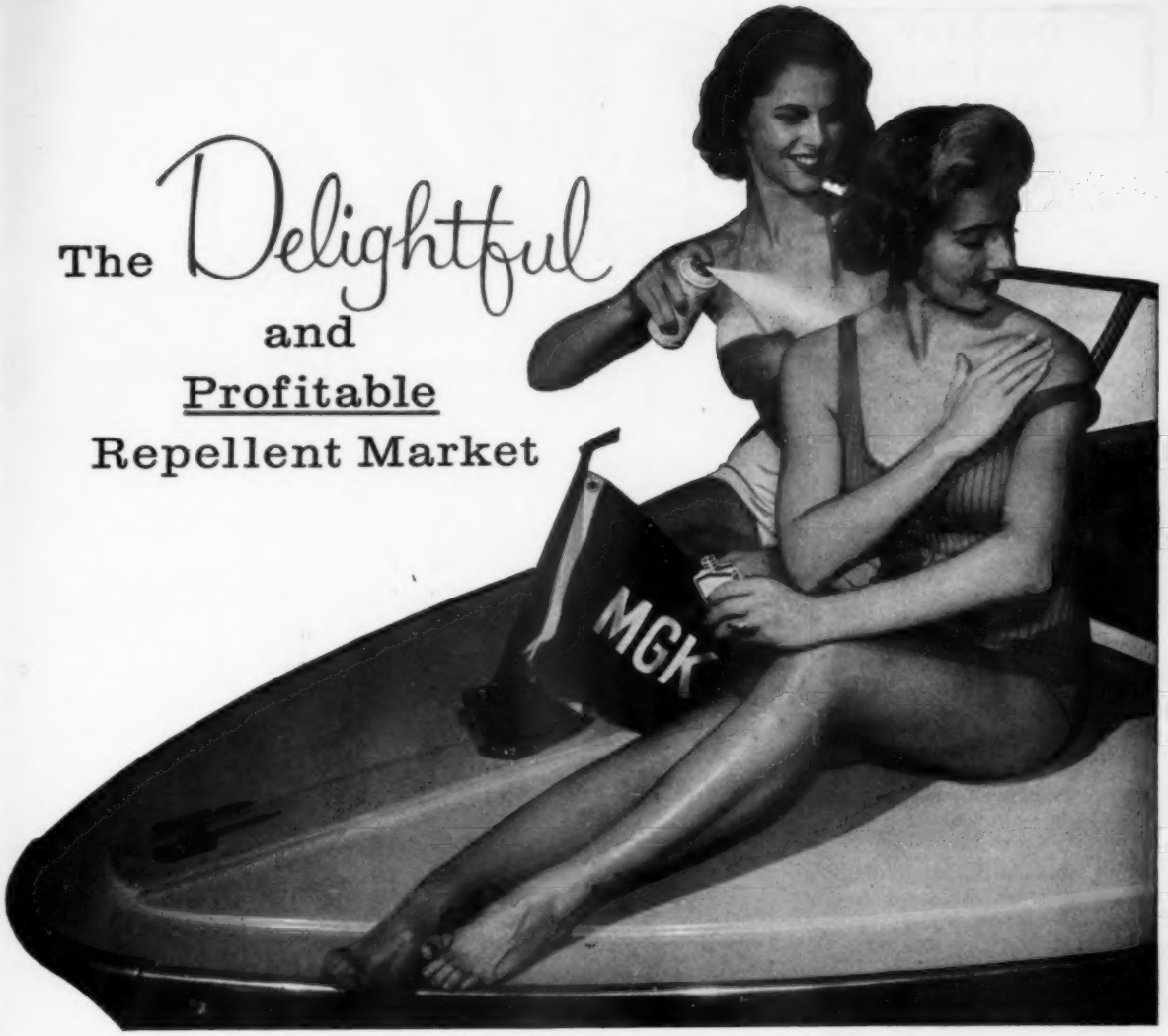

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INDUSTRY MEETING CALENDAR

American Chemical Society, 140 national meeting, Chicago .....Sept. 3-8

Drug, Chemical & Allied Trades Association, annual meeting, Pocono Manor Inn, Pocono Manor, Pa. .....Sept. 14-17

Chemical Specialties Manufacturers Association, Meeting of Board of Governors, Division Executive Board and Committees, Oyster Harbors Club, Osterville, Mass. .....Sept. 25-27

Society of Cosmetic Chemists, annual seminar, Barbizon Plaza Hotel, New York.....Sept. 26-27

National Hardware Show, McCormick Place, Chicago.....Oct. 2-6

Federation of European Aerosol Associations, 3rd International Aerosol Congress, Lucerne, Switzerland .....Oct. 3-8

Packaging Institute, 23rd Annual National Packaging Forum, Biltmore Hotel, New York....Oct. 18-20

National Agricultural Chemicals Assn., annual meeting, Homestead, Hot Springs, Va. Oct. 29-Nov. 1

Canadian Manufacturers of Chemical Specialties Association, fourth annual meeting and conference, Royal York Hotel, Toronto, ...Oct. 30-Nov. 1.

Federation of Societies for Paint Technology, annual meeting, Shoreham and Sheraton-Park hotels, Washington, D. C.....Nov. 2-4

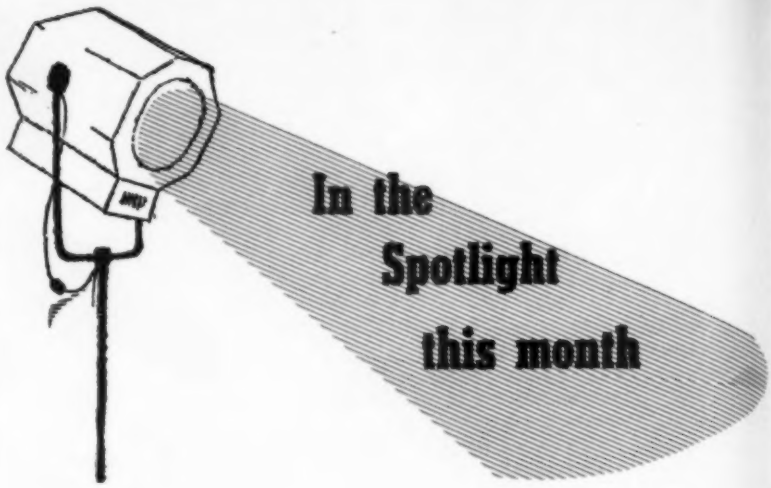
Packaging Machinery Manufacturers Institute, Cobo Hall, Detroit, Mich. .....Nov. 7-10

Chemical Industries Exposition, Coliseum, New York Nov. 27-Dec. 1

Society of Cosmetic Chemists, annual meeting, Biltmore Hotel, New York .....Nov. 28

Chemical Specialties Manufacturers Association, 48th Annual Meeting, Roosevelt Hotel, New York, N. Y. .....Dec. 4-6

Chemical Specialties Manufacturers Association, 49th mid-year meeting, The Drake, Chicago .....May 14-16, 1962



• **A New Idea in Aerosol Contraceptives** . . . Per-unit price, a vital consideration in contraceptive sales to the low-income population, is the major thought behind this new contraceptive device just invented by a New York druggist. Details of how the unit was developed, the background of the inventor, and of what he intends to do with it are discussed fully in a special **Aerosol Age** feature on page 23.

• **Spray Patterns for Cosmetic Aerosols** . . . Although long known to the laboratory experimenter, the differences in spray patterns obtained with different propellant mixtures used with various valves has been written about relatively rarely. On page 20, A. Herzka, well-known British aerosol consultant, shows graphically how the spray pattern may be widely varied.

• **Aerosol Powder Formulations** . . . This paper, presented first in May at the CSMA convention in Chicago, has already aroused a good deal of interest. Presented by two Union Carbide researchers, it advances the idea that mathematical calculation may be used to increase the sold matter percentage in powder formulations to 30%. The article begins on page 25.

• **A Statistical Study of Aerosol Shave Creams** . . . A significantly documented study of a wide range of product characteristics for shaving creams is this paper from the TGA Meeting in May. Some 20-odd tables and charts are used to graphically illustrate comparisons in the products, propellants, etc. Begins on page 28.

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Non-volatile Matter (mg/100 ml) max	2.0
Distillation (°C)	
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Permanganate Time (minutes) min	25
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EDITORIALS

A Very Bold Front . . .

In recent years there have been few more clear-cut cases of "grasping at straws" than the rosy confidence expressed last month by backers of "fair trade" legislation in Congress. In the face of some of the strongest attacks ever made in print against marketers, these advocates of the Harris and other bills would have us believe that this type of legislation has a fair chance of passage during the current session of Congress. Admittedly most of this confidence is manifested in the drug trade and other merchandising press (which is eschewing a viewpoint few would term unbiased), but the aerosol readers of this press could conceivable be left with the idea that such a bill *is* possible this year.

Emanating from Washington during June and July were a series of developments calculated to generate considerable Congressional resistance to any legislation designed to give marketers added supervision over prices of their product. These included:

1. A furor in the Senate as Senator Estes Kefauver formally moved for a hearing on his controversial bill to regulate pricing in the drug industry. This was sparked by charges of " artificial monopolies", "illegal and unfair price fixing" and the listing of a number of specific products which have been ballooned in price from a few cents (manufacturing costs) to $20 or more (cost to the customer).

2. Senate Judiciary Subcommittee hearings which brought out that consumers are beginning to react strongly to being "cheated" by packages misleading as to contents, descriptive wording, etc. Testimony by Senator Maurene Neuberger and other prominent women in business, politics, and economics that "invisible inflation" and "trickery" were being practiced by marketers and packagers gave growing weight to a possibility that Congress might act to curb such abuses.

3. As of July 21, the Federal Trade Commission is working under some far-reaching rule changes designed to facilitate prosecution of wrong-doers and stop delaying tactics by respondents. Obviously designed to give the FTC a "bigger stick", the new rules would make it impossible for a respondent to settle for a consent order once an FTC complaint is served.

4. Senate hearings to strengthen the Federal Communications Commission in which the fact emerges that a principal reason behind the poor cultural level of television is pressure brought to bear by advertisers (i.e., the marketers) and their agencies. Although not as serious as the first three situations cited above, the F.C.C. hearings indicate (at least in Congress) that more rather than less supervision of advertisers in these areas may be in the offing.

5. Persistent reports by Washington observers that the same Senator Neuberger mentioned above is ready to propose a "Department of Consumer Affairs", at cabinet level, to watch industry for violations of fair play in dealings with the consumer. This is reported to have the backing of President Kennedy and other powerful Government officials.

A realistic view of what all this might mean will inevitably lead to the conclusion that very likely the "fair trade" concept is finished for this session of Congress and possibly for some time into the future. It would also appear to indicate that marketers should stop relying on the vain hope that Congress will enact some type of legislation to rescue them from the incursions of discount houses and other enterprising merchandising systems that may make older systems obsolete.

The sooner the National Association of Retail Druggists and other organized backers of "fair trade" get down to the cold realization that their best approach lies in attempts to modernize their merchandising, rather than fighting to preserve a relic, the easier their real job will be.

Spray Patterns

for Aerosol Cosmetics

*By A. Herzka**
Pressurized Packaging Consultants Ltd.
London, England

UNDOUBTEDLY all personnel concerned with the marketing of pressurized products are fully aware that many problems have to be overcome before a pack is ready for placing before the public. Thanks to many informative publications during recent years the more common problems, such as corrosion and compatibility, have been dealt with fairly adequately. Within the scope of this paper it is proposed to deal with spray patterns and to summarize the ways and means to achieve correct results.

The more important factors which control the type of spray obtained are:

1. The nature of the propellant, i.e., whether a liquefied or compressed gas, or a mixture of both types,
2. The ratio of propellant to product,
3. The headspace pressure,
4. The valve design and
5. The viscosity of the product.

Some of these factors are more important than others when combined differently in order to achieve a definite purpose. Thus, when employing a liquefied gas propellant, the headspace pressure is not as important as on those occasions when a compressed gas is employed. But even with a compressed gas, the headspace pressure is nowhere near as important with liquids of low viscosity as with those that are highly viscous.

In order to illustrate these points the chief types of pack that are likely to be encountered in the cosmetic and allied industries are dealt with below.

Surface Sprays

Surface sprays embrace the majority of cosmetic preparations, and examples are hair lacquers, hair oils, insect repellents, powders, anti-perspirants, perfumes, suntan preparations and foot sprays.

For such packs two types of valve could be employed.

Standard spray valves are those which discharge continuously while the acuator is operated, and they are subdivided into two groups according to the nature of the actuator.

Standard valves with *ordinary* actuators are representative of the type that is most commonly employed when liquefied propellants are part of the liquid phase, providing the internal pressure of the pack is not much below 30 psig. at 70°F. No hard and fast figure can be given because the nature, i.e., viscosity, of the product could easily displace the lower pressure limit in each direction.

Ordinary actuators, generally speaking, have external orifices which are relatively large (diameter = 0.02 in.) and cylindrical or conical in shape. If a conical orifice is employed, then the base of the cone is on the atmospheric side, often known as a "forward tapered orifice." Very occasionally the direction of the cone is reversed, resulting in a "reverse tapered orifice," the purpose of which is to give a limited degree of turbulence to the emerging spray.

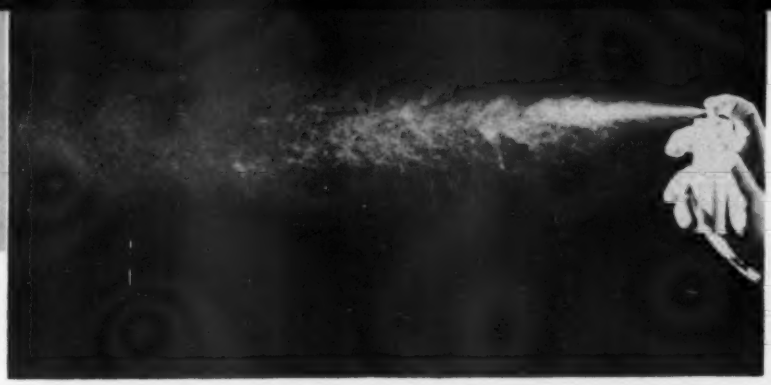
Standard valves with *break-up spray* actuators are necessary; (a) where the liquid propellant forms a phase distinct from the liquid product, (b) where the internal pressure is low even if the liquid product and liquid propellant are intimately mixed and (c) where compressed gases, both soluble and insoluble, are employed.

Atomization is achieved by forcing the product stream through a swirling chamber usually situated very close to the external orifice of the actuator. A turbulence is then caused in the liquid stream as it passes through this special chamber to the final orifice, where it breaks up into fine particles which are, however, often coarser than the particles obtained by direct propellant atomization.

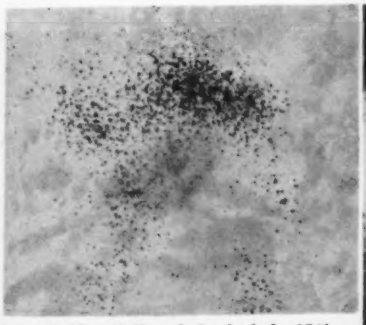
The second valve type is known as a *metering* valve, and its function is to deliver an equal dosage at each operation. It is usual to employ *ordinary* actuators, but with formulations of low pressure or where compressed gases are employed, mechanical *break-up spray* actuators are necessary. In order to assess the spray pattern of a particular formulation, the method of Dixon[1] or Root[2] indicating the pattern at right angles to the spray direction, should be utilized in combination with an assessment parallel to the direction of the spray. The latter may be done visually but it is best to make use of high-speed

* Presented Sept. 1, 1960 at the first Congress of Cosmetic Chemists, International Federation of Societies of Cosmetic Chemists, Munich, Germany, and printed in the *Journal of the Society of Cosmetic Chemists*, for Nov. 1960.

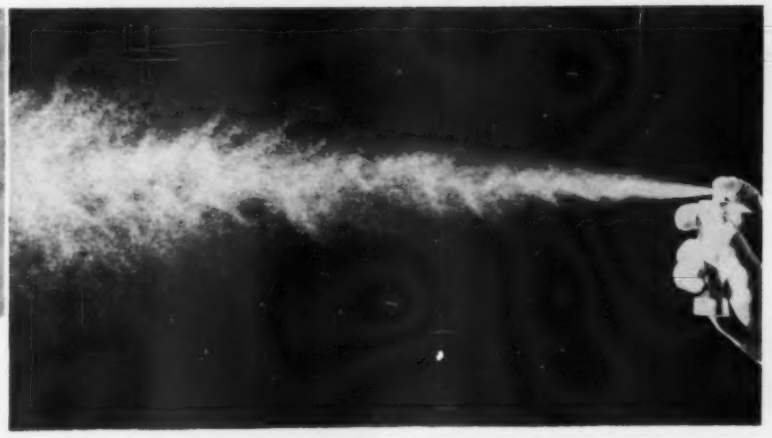
1a and 1b: 50% ethyl alcohol, 25% propellant 11, 25% propellant 12, with Valve "A" standard button.



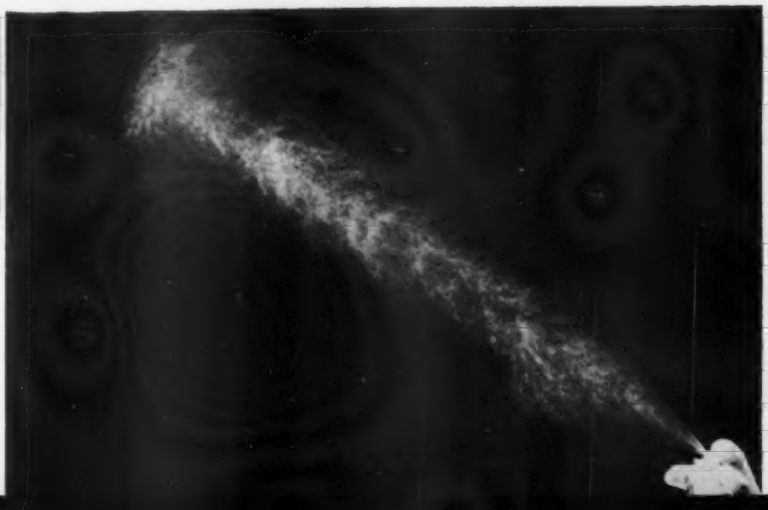
2a and 2 lb: 65% ethyl alcohol, 35% propellant 12, Valve "A" standard button.

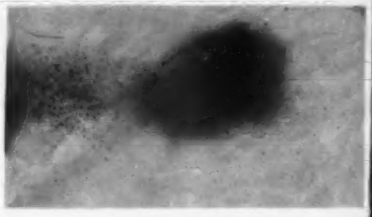


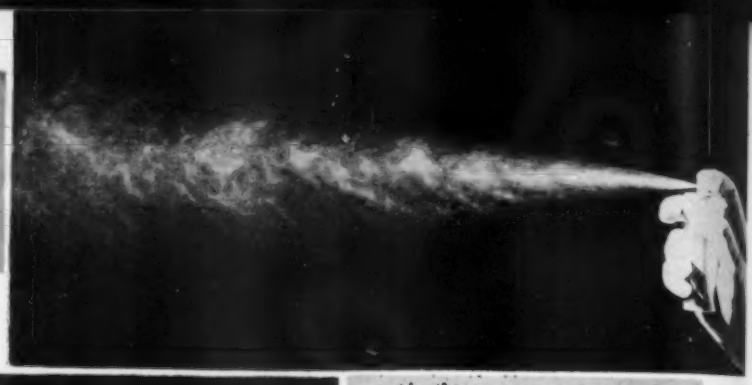
3a and 3b: 65% ethyl alcohol, 35% propellant 12, Valve "A" with break-up actuator.



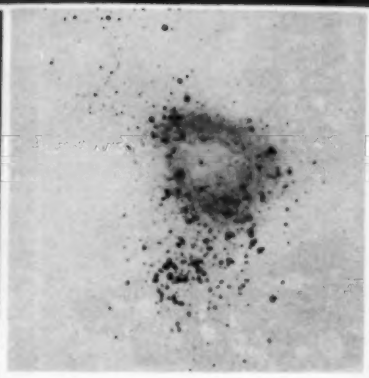
4a and 4b: 65% ethyl alcohol, 35% propellant 12, Valve "B" with break-up actuator.



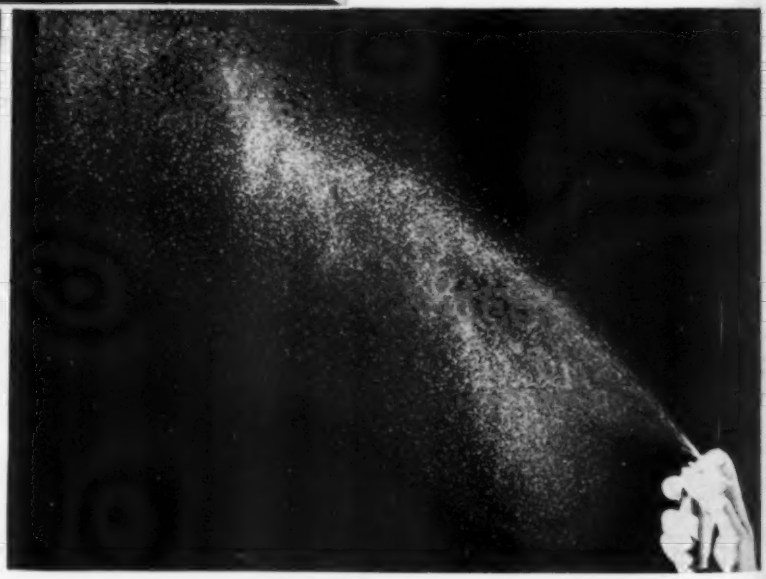




5a and 5b: 65% alcohol, 35% propellant 12, with Valve "C" break-up spray actuator.



6a and 6b: 66% ethyl alcohol, nitrogen at 90 psig., Valve "A" break-up spray actuator.



7a and 7b: 66% ethyl alcohol, nitrogen at 90 psig., Valve "B" break-up spray actuator.

photography which permits a better comparison between different sprays, and also serves as a permanent record. Dixon's method was employed for obtaining the relevant illustrations that follow.

In the early days of this industry, hair lacquers (and suntan preparations) were formulated in the following general manner:

Product, %	40 or 50
Propellant 11/12 (1:1) mixture, %	60 or 50
	100 100

The sprays obtained with these formulations, when sprayed through standard valves, are considered suitable for their intended purpose (Figs. 1A, 1B). A possible drawback in the case of hair lacquers, is the flammability rating according to the United States I.C.C. regulations, and possibly because of this, the formulation 20% product, 80% propellant 11/12 1:1) has been proposed for hair lacquer[3]. Undoubtedly safe so far as flammability is concerned, the spray obtained consists of very, very fine particles which can hardly be considered satisfactory for surface application, and there is a great risk of

(*Continued on Page* 71)

a new package design for an

Aerosol Contraceptive

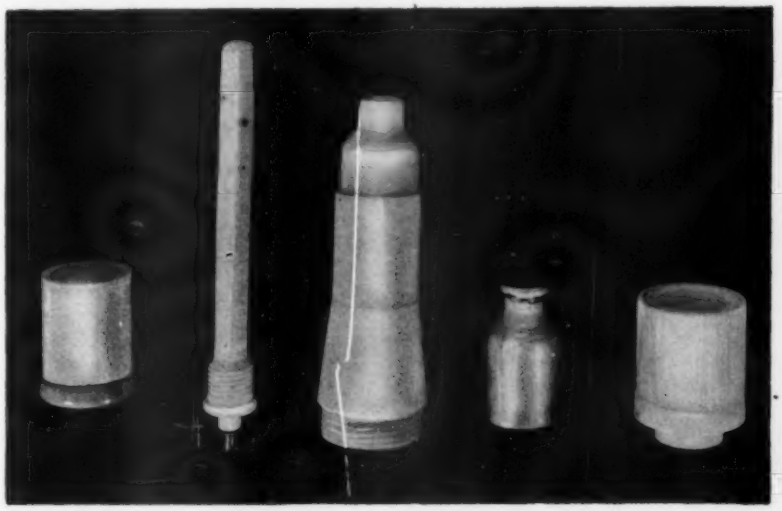
THE LARGER and more prosperous the aerosol industry becomes, the more it attracts fresh new talent which has something substantial to add to its technical developments and general knowledge. This somewhat obvious maxim is proven every month in the "New Patents" section of this magazine, where so-called "aerosol amateurs" account for more than their share of new devices on which patents are issued.

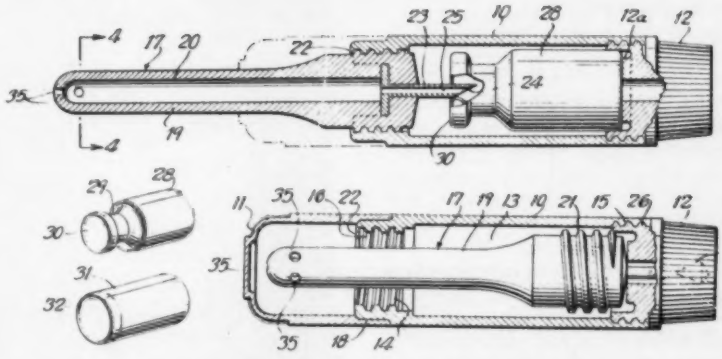
Still further proof of this idea is a new device for dispensing aerosol contraceptives and similar materials developed over the course of the last year by an inventive druggist in downtown New York City. Long ago impressed by the hair sprays, insecticides, and colognes he has been selling in his store, the druggist, Vincent Indelicato, has been convinced that the aerosol principle is not being given its just due by marketers of pharmaceuticals.

In his store at 16 Spring Street, on Manhattan's lower East Side, he has been working on various new approaches to adapting an aerosol device for a variety of new pharmaceutical uses. But it has been in the area of contraception that most of his time and effort has gone, mainly because of a pronounced medical leaning instilled by assisting an uncle who was a gynecologist. A pharmacy graduate from Fordham University, Mr. Indelicato followed his inclinations far enough to enroll at the Medical School of Italy's University of Milan (making use of his G. I. Bill privileges), but marriage to a beautiful Italian girl and the beginnings of a family put a slight crimp in his medical ambitions. Now he makes up for this lost career by inventing various devices, most of them in the field of gynecology, as a hobby.

The aerosol contraceptive device, which he showed to *Aerosol Age* in an exclusive interview last month, incorporates a principle different from the two or three commercial aerosol contraceptives already placed on the market. By use of small aluminum "one-shot" vials, which are punctured at time of use by a needle valve device, Mr. Indelicato's dispenser can be used over and over again for an unlimited time—so long as the inexpensive cartridges are replaced. Each time it is used, the device can be easily disassembled and washed under a faucet.

THE MOST striking aspect of the entire concept is its simplicity. Chief working part is the applicator





Breakdown of the components of the package with diagrams used for patent application.

tip-puncturer combination. When the aluminum cartridge has been placed into the all-plastic device, the applicator tip is simply turned down into the barrel. It punctures the cartridge and delivers the contraceptive foam material up through the hollow needle and out four "ports" in the applicator tip.

Equally simple is the cartridge, which is a two-piece vial shaped like a small bottle. The aerosol formulation, spermicide and propellant, are cold filled into the 15 mm. cartridge and then the flat top is roll-crimped. Mr. Indelicato has found a formulation employing 8% propellant 12 and 114 (in a 40:60 percentage) as the best suited for a germicidal product which also contains a carrier and a foaming agent. He reports that the roll-crimping operation is performed by using an adapter on standard crimping equipment, and that the cap is fitted with either a flowed-in or loose gasket similar to that used on the one-inch mounting cup.

In his patent application, filed in April, he makes special mention of

Vincent Indelicato

the object of the invention as "providing a spray device, which is relatively small in size, light in weight, easy to use, and effective for providing a proper dispersion of a germicide. It is a further object of the invention to provide a spray device which does not have the foregoing disadvantages of the prior art devices

(*Continued on Page* 73)

THE SAMPLE SHELF

By Jerome N. Michell
vice president
The Walter Frank Organization
Hillside, Ill.

AEROSOLS have made their impact upon many fields, hundreds of products, thousands of brands.

The aim of this column is to create an awareness of the elements of good aerosol design, and to single out (for better or for worse) the good and bad points of specific packages as examples. The hope is that over a period of time, the overall standard of aerosol packaging will be improved by these frank, unbiased comments.

For some reason, poor design often accrues to an entire market, either because no one in the field has set a good example, or because psychologically the very nature of the market shrugs off design as being "not too important."

One of these is the automotive field. Of course, some of the major companies have done a fine job—notably Standard Oil of Indiana, and DuPont—as to clarity, simplicity, and brand identity. But there are a conspicuously large number of companies which seem to feel that, as long as they sell mostly in service stations, garages, automotive supply stores, hardware stores, etc., design is of secondary importance.

To these—and you should be able to identify yourselves simply by looking at your package—we say, "Stop, consider these points before you dismiss our criticism."

1. Aren't many or most of your sales "impulse sales"—those in which the customer did *not* have the product on his shopping list, but bought it because he saw it on the shelf, or in a display, or he thought it would be a good convenience or safety item to use or have handy?

2. Regardless of what the product is or where it is sold—doesn't the prospect have to *see* it first! Won't a package designed to get his attention and tell him its function at a glance, sell better than a nondescript, busy, or "hard-to-read" package?

3. And shouldn't the cardinal principle of merchandising be to have a package that will be a better "attention-getter" than that of your competitor?

How many marketers know that they ought to improve their packages and how many try. Unfortunately, the results are the fruit of design ignorance or design dementia. A design needn't be beautiful to be good. Neither does it have to be so "cute" that its cuteness overshadows its primary mission of selling more of the product.

Pictured this month is a colorful aerosol of modern lettering which falls flat on its face in an attempt to be bold and different. It might be good for an exhibition of poster art, but the artist who did it seems to have fallen in love with unconventional lettering and ignored the basic elements of package design. The use of color is fine—but why design confusion by switching colors, introducing outlines and reverses and letter style all in one four-letter product name? How much better this package would have been if all four letters were in the rich purple of the first letter. And, of course, the horizontal name, which cannot even be read around the visible curved surface, only adds to the confusion.

Thus, in an effort to be different, the package fails—when with less effort and more honesty in judgment, it could have been a fine "attention-getter."

How's *your* aerosol designs? ☆

Aerosol Powders

an formulation approach to allow greater percentage of solids

*By D. C. Geary and R. D. West**
Union Carbide Corp.
New York, N. Y.

Introduction

Dispensing powders in aerosol form offers numerous advantages. The messiness and waste sometimes associated with conventional application may be eliminated and the unused powder is not subjected to atmospheric exposure. Pharmaceutical, household, cosmetic, agricultural and industrial powders are all candidates for pressure packaging.

Pressurized powders traditionally have been limited to a maximum of 15 per cent by weight of powder unless the particle size is reduced to 10 microns or less through the use of special techniques such as micronization. Formulations containing powders of larger size or amount generally exhibited agglomeration, caking, valve clogging, or leakage.

The transition from pressure packaging of liquids to pressure packaging of powders introduces two requirements. The first, prevention of agglomeration and caking, is achieved by stabilizing the suspension of powder in propellant. The second, valve clogging and leakage, requires new valves to replace the older models which were designed primarily for liquids.

This paper describes a system for stabilizing propellant powder suspensions of high solids content. A valve to accommodate such suspensions has been developed and will be discussed at another time.

I. Concept of the System

A given volume of any powder consists of two elements: the volume of the solid particles themselves and the interstitial, or void, volume between the particles. If the void volume is either filled with, or enlarged by, substances which prevent the particles from agglomerating, a stable suspension will be formed.

The void volume of any powder is the difference between the total volume at atmospheric pressure and the solid volume (the smallest volume which can be obtained under compression without deforming the particles). These values are readily calculated from the bulk density and the absolute density, which are available from the powder manufacturers.

The two classes of materials that can be used to fill the void volumes are (1) bulking agents, which are themselves very finely divided powders, and (2) liquids, including propellants. The use of bulking agents to impart flow characteristics to powders is well known. One of the problems is to determine the amount required to stabilize the suspension of powder.

To determine the minimum requirements of bulking agent, use was made of an International Model V centrifuge at 500 rpms. to produce a mildly accelerated settling test. Chlorhydrol provides an example of the type of data that can be obtained by this method, and was chosen because earlier experience had shown it to be one of the more difficult powders to package as an aerosol. Various proportions of bulking agent, in this case Santocel 54, along with an excess of propellant, were added to Chlorhydrol in compatibility tubes and the tubes were thoroughly shaken. The volumes were recorded as shown in the attached table. It can be seen that the volumes are additive. This implies

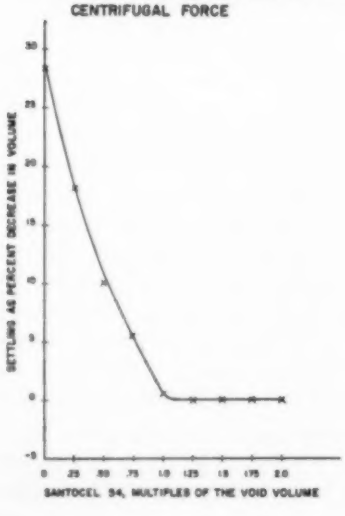
* Presented at the 47th mid-year meeting of the Chemical Specialties Manufacturers Assn., Chicago, Ill., on May 17, 1961.

that the particles of bulking agent are not merely filling in the void space of the active powder, but are actually separating the particles from each other. Thus, the void volumes must also be additive.

Immediately after being shaken and for a short period thereafter, the powder remained suspended. Within 72 hours, the powders settled to their bulk volume. At the end of this time, each of the tubes was centrifuged for two minutes at 500 rpms. and the tubes were allowed to stand for an additional 72 hours. No further settling having taken place, the powder levels were observed and recorded.

The settling as expressed by the per cent decrease in volume is shown in Figure I. It can be seen that, when the volume of Santocel 54 was less than the void volume of the Chlorhydrol, there was a large decrease in the total powder volume. When the ratio was 1:1 or greater there was no change in volume.

SETTLING OF BULKED POWDERS UNDER CENTRIFUGAL FORCE



Thus, minimum settling is obtained when the amount of bulking agent is at least equal to the void volume of the active powder.

These findings can be expressed as follows:

For any powder:

$Vt = Vs + Vv$ or $Vv = Vt - Vs$ (1)

where:

Vt = Total volume at atmospheric pressure

Vs = Solid particle volume

Vv = Void volume between particles

If subscripts 1 and 2 refer to active powder and bulking agent, respectively, and if, as just shown, the void volumes are additive, we can say:

$$\Sigma\ Vv = Vv_1 + Vv_2 \quad (2)$$

From (1):

$$Vv_2 = Vt_2 - Vs_2 \quad (3)$$

Substituting in (2):

$$\Sigma\ Vv = Vv_1 + (Vt_2 - Vs_2) \quad (4)$$

This gives a relationship for the total void volume of the powder mixture. An amount of liquid must now be added equivalent to the total volume (Σ Vv). It has been found that, in addition to the propellant (A), small amounts of oil (B) and a surfactant (C) are necessary to facilitate the flow of suspended particles through an aerosol valve. The total volume of liquid components can be expressed as:

$$A + B + C = k \Sigma Vv = k\,[Vv_1 + (Vt_2 - Vs_2)] \quad (5)$$

where:

A, B and C represent the volumes of propellant, oil and surfactant respectively,

and:

$k = 1$ or slightly more than 1

The volume contributed by solid particles of bulking agent (Vs_2) will usually be small in relation to Vt_2 since a bulking agent consists mostly of void space. In addition, it has been shown that minimum settling occurred when the volume of bulking agent was equal to the void volume of the active powder, or:

$$Vt_2 = Vv_1 \quad (6)$$

Therefore, neglecting Vs_2 because it is small, and substituting equation (6) in (5) we have:

$$A + B + C = k\,[Vv_1 + Vt_2] = k'\,Vv_1 \quad (7)$$

where:

$k = 1$ and $k' = 2$

It is essential that $k' = 2$ be maintained as close as possible. If $k' < 2$, thixotropic masses will be formed which will be unmanageable, and if $k' >> 2$, excess liquid is present. On initial actuation, the first material to be ejected will be only liquid.

Equation (7) may be used with any powder, provided it requires a bulking agent. If a powder has a bulk density of 12 pounds per cubic foot or less, it may serve as its own bulking agent. In such cases, simply drop the Vt_2 term from equation (5).

II. Solid Components of the System

A. *Powders*

Any powder may be suspended and dispersed, provided it is insoluble in the liquid components. A knowledge of the size and shape of the particles is not required to use equation (7). Differences of particle size and shape are reflected by the absolute and bulk densities, as discussed below.

B. *Bulking Agent*

Any powder that is lower in bulk density than about 12 pounds per cubic foot may be used as the bulking agent, provided it is insoluble in the liquid components. Powders with a bulk density of one to four pounds per cubic foot are preferred, such as Santocel 54, in that a smaller weight of bulking agent is required to equal the void volume of the active powder. Powders may be self bulked if a portion of the active powder is reduced to a sufficiently low bulk density. Also, a portion of the bulking agent requirement may be reduced if one or more of the active powders, such as hexachlorophene, is capable of acting as a bulking agent.

III. Liquid Components of the System

The total volume of propellant (A), inert liquid (B) and surfactant (C)

must be approximately equal to the total void volume (ΣVv). However, in addition to satisfying the total amount of liquid required to obtain fluidity, a minimum amount of inert liquid and surfactant must be present to dispense the powder mixture in a satisfactory manner. Of the total liquid volume, it has been found that 5.8 per cent should be inert liquid and 2.2 per cent should be surfactant. Larger proportions may be necessary to obtain specific properties in the ejected product.

A. *Propellant*

Any liquified propellant, or combination thereof, with sufficient pressure to dispense the powder mixture can be used. Care should be exercised in selecting the propellant, since it governs the temperature, drying time and delivery rate of the dispensed product.

If it is desired to substitute one propellant for another, equal volumes should be used. However, because of differences in density, a different weight of propellant might be needed to satisfy the minimum propellant requirements.

B. *Inert Liquids*

Inert liquids, such as mineral oils and fatty acid esters, that are miscible with the propellant and surfactant serve three functions:

1. They help prevent agglomeration, possibly by functioning as dielectrics, and thus help to stabilize the suspension.
2. They lubricate the powder particles and the valve.
3. They control the appearance of the product after ejection and reduce "dusting."

Inert liquids with specific gravities of less than 0.9 at 60° C. and Saybolt viscosities of less than 90 at 100° F. are preferred.

C. *Surfactants*

The presence of a surfactant to aid the oil in coating the powder particles has been found to be essential. Water soluble surfactants may be added to obtain rinsability of the ejected product if desired.

Table
Effect of Santocel 54 on a Fixed Volume of Aluminum Chlorhydrol

Volume of Aluminum Chlorhydrol cc.	*Volume of Santocel 54* cc.	*Volume of Powder Mixture Calculated*, cc.	*Volume of Powder Mixture Experimental*, cc.
15	2.5	17.5	17.5
15	4.9	19.9	19.9
15	7.4	22.4	22.4
15	9.8	24.8	24.8
15	12.2	27.2	27.2
15	14.6	29.6	29.6
15	17.1	32.1	32.1
15	19.5	34.5	34.5

IV. Application of the System

To use the powder system, it is necessary, first, to calculate void volume of the active powder. This can be obtained from density data as shown on the following page.

From equation (1):

$$Vv_1 = Vt_1 - Vs_1 \qquad (8)$$

And by definition:

$$Vt_1 = w_1/BD_1 \qquad (9)$$

where:

Vt_1 = Total volume of active powder at atmospheric pressure

w_1 = Weight of active powder

Bd_1 = Bulk density of active powder at atmospheric pressure

and:

$$Vs_1 = w_1/AD_1 \qquad (10)$$

where:

Vs_1 = Volume of solid particles of active powder

AD_1 = Absolute density of active powder at the yield point

Substituting these relationships in (8):

$$Vv_1 = w_1/BD_1 - w_1/AD_1 \qquad (11)$$

From equation (6) the volume of bulking agent (Vt_2) to be added must equal (Vv_1). The volume of liquid components is then determined from equation (7).

The volumes of bulking agent and liquid components can then be converted to a weight basis using appropriate densities.

The bulk and absolute densities are customarily expressed in pounds per cubic foot. Both densities are available from the powder manufacturers or may be determined experimentally. Determination of the bulk density by the "tap method" is preferred, since it is in general use. The absolute density can be obtained by measuring the volume of the powder at the "yield point."*

The following example illustrates how the relationships discussed above can be used to derive a formulation for packaging 100 pounds of a hypothetical active powder.

1. Assume the following information is obtained from the supplier:

	Pounds per cubic foot
Active powder bulk density	30
Active pdr. absolute density	77
Bulking agent bulk density	3.8

2. From equation (11) calculate the void volume:

$$Vv_1 = \frac{w_1}{BD_1} \cdot \frac{w_1}{AD_1} = \frac{100}{30} \cdot \frac{100}{77}$$

$= 2.03$ cubic feet

3. From equation (6) an amount of bulking agent equivalent to the void volume (i.e., 2.03 cubic feet) is required. Convert to a weight basis from the bulk density:

$w_2 = Vt_2 \times BD_2 = 2.03 \times 3.8$

$= 7.71$ pounds

4. From equation (7), calculate the volume of (A), (B) and (C) required:

$A+B+C = k' Vv_1 = 2 \times 2.03$

$= 4.06$ cubic feet

From Section III:

$B = 5.8\%$ of $(A+B+C) =$

$= .058 \times 4.06 =$

0.24 cubic foot

(*Continued on Page* 68)

* The yield point may be calculated by the "offset method." See Popov, E. P.: "Mechanics of Materials," p. 30-31: Prentice Hall Publishing Co.

A Statistical Study of

AEROSOL SHAVE CREAMS

*By Phillis Carter and H. M. Truax**
Atlas Powder Co.
Chemical Product Development Dept.
Wilmington, Del.

AEROSOL shaving creams, which were first introduced in 1950, represent approximately 67% of the shaving cream dollar volume[1]. Despite their popularity, there has been little published work describing the effects of ingredient choice on product properties. The purpose of this study was to screen a number of formulation factors to determine their relative effect on concentrate properties and on foam and dispensation properties of the pressurized product.

The first step in this study was a survey of the publications[2-17] on aerosol shaving cream and related products to determine the scope of past work. In addition to information on the introduction and development of aerosol shaving creams, and data on their preparation, packaging, and evaluation, this review yielded a number of typical formulations. The base of most of these formulas is approximately 5 to 11% stearic-lauric or stearic-coconut oil fatty acid soap, usually from triethanolamine. The blended soaps contain at least 65% of the stearic soap. Polyols, glycerin, 70% sorbitol solution, or propylene glycol, are used in most of them at the 1 to 10% level. The propellant level usually used is 5 to 10%. Many ingredients such as mineral oil, petroleum, cetyl alcohol, and surfactants are added for special effects. This literature review pointed up the fact that the patent of Spitzer, Reich and Fine[15] covers many typical products. If the formulating ideas included in the present study are considered for adoption, patent position under this or other existing patents should be determined.

The next step was a survey of several cream manufacturers as well as a container and propellant supplier to obtain additional formulation data on which to base the proposed study. From the data obtained it was concluded that the usual soap concentration is 7 to 12%, the usual fatty acid is blended stearic acid-coconut oil fatty acid at approximately an 18/20 ratio, and the free fatty acid range is about 1 to 3%. Polyols are usually used at a 2 to 10% level. In addition, fluorinated hydrocarbons (usually dichlorodifluoromethane-dichlorotetrafluoroethane 40/60 or 57/43, weight % blends) are most frequently used as the propellant; their use level is 6 to 10%. Recently liquefied petroleum gases (hydrocarbons) have been adopted as aerosol shaving cream propellants. One manufacturer indicated that the usual propellant used is an 87% isobutane, 13% propane blend (mol %), used at approximately 3 to 7%. A propellant supplier indicated that an 80/20 (mol %) ratio is commonly used. A publication[17] by a liquefied petroleum gas supplier indicated that these propellants are used on the same weight basis as fluorinated hydrocarbons. A more recent publication[18], not available at the time when this study was begun, indicates that substitution of hydrocarbons for fluorinated hydrocarbons should be made on a volume basis. The remainder of the observations made as the result of the earlier survey are corroborated by this reference.

Based on the literature and customer surveys, a number of variables appeared to be important in aerosol shaving cream formulation. They are: soap type, soap concentration, fatty acid type, free fatty acid concentration, polyol type, polyol concentration, propellant type, propellant concentration, additive type, and additive concentration. Of these, study of soap type, additive type, and additive concentration would have increased the amount of work extensively. Therefore, it was decided to limit the work by eliminating these three variables and studying the remaining seven, using triethanolamine soaps—which proved to be the most widely used soap type in both surveys.

Neither survey yielded much information about methods of evaluation of aerosol shaving creams. One publication[19] describes foam volume generated by a given amount of concentrate, the percentage discharged from the can, foam strength, foam stability, and wettability as important properties for aerosol foams. One shaving

*Reprinted from Proceedings of the Scientific Section of The Toilet Goods Association, No. 35, May 1961.

TABLE I

Variables and Their Use Levels

Designation	Variable	Use Level Low (−)	Use Level High (+)
A	Soap concentration	8%	12%
B	Fatty acid ratio Triple pressed stearic acid/ coconut oil fatty acid	70/30	90/10
C	Free fatty acid concentration	1%	4%
D	Polyol type 70% Sorbitol solution—S Glycerin—G	S	G
E	Polyol concentration	2%	10%
F	Fluorinated hydrocarbon type Dichlorodifluoromethane/ dichlorotetrafluoroethane blends	40/60	57/43
G	Fluorinated hydrocarbon concentration	5%	9%
Y	Propellant type Liquefied petroleum gas (isobutane-propane blend) Fluorinated hydrocarbon (dichlorodifluoromethane/ dichlorotetrafluoroethane blend)	LPG	57/43
Z	Propellant concentration	5%	9%

cream manufacturer considered bubble size an important criterion. Shaving properties such as blade lubrication, spreading on the face, beard softening and rinsability were also mentioned[12, 13] as important. Evaluation of the effect of the shaving cream concentrate on the aerosol can has also been rated important[6, 8, 9, 12].

In considering the properties that should be evaluated in this study, it was apparent that a study of shaving properties and can corrosion, although quite important, was beyond the scope of available personnel and equipment. It was decided that the testing would be limited to evaluations on which reproducible numerical data could be obtained, or to determinations which could be assigned meaningful numerical data. For evaluation of the shaving cream concentrate, viscosity, pH, density, and stability were chosen. For evaluation of the foam and dispensation properties of the present packaged concentrate, shaves per can, residue in the can after discharge, foam density, foam strength, drying time and bubble size were selected.

Experimental Planning

The large number of variables indicated that many experimental runs might be required. It became apparent that a statistically designed experiment should be considered. A statistical experimental design is an orderly planned experiment in which it is decided from both a statistical and practical point of view how to evaluate the effects of various experimental conditions. Under this approach, all variables are changed simultaneously as opposed to the original concept of varying only one factor at a time. The advantages of changing all factors simultaneously according to a definite plan can be summarized as follows:

1—It is possible to determine differences in end result that are smaller than would be detected if only one factor was varied at a time.

2—This approach allows study of many variables with a minimum number of experimental runs.

3—The use of this approach allows an estimate of the inbred experimental error in the procedure. This error is difficult to determine in common procedures without running a number of separate experiments.

In screening experiments the strategy resolves about the fact that as many variables as possible should be examined, keeping the number of levels of each variable as small as possible. In this way, the maximum amount of screening information is obtained for a minimum number of runs.

The purpose of the particular program on shaving cream was to screen a number of factors and determine their relative effect on a series of concentrate, dispensation, and foam properties. After a thorough consideration of the possible variables that could be studied, it was decided that a statistical experimental design would be used to evaluate the most important variables chosen earlier. The statistical design selected is termed a "two level factorial" in which each of the variables is evaluated at two levels—a high and a low level[20]. These levels were based on the results of the surveys discussed earlier.

A list of the variables is shown in Table I. Each of the variables has been coded by the addition of a letter A through G with two alternate variables coded as Y and Z. The purpose of this coding is to allow interpretation of the experimental plan and the resulting experimental data without the need for continually writing the

TABLE II

Experimental Conditions (Abstract)

Treatment Combinations (Run Conditions)	Variables A	B	C	D	E	F	G
(1)	—	—	—	—	—	—	—
adfg	+	—	—	+	—	+	+
bdeg	—	+	—	+	+	—	+
abef	+	+	—	—	+	+	—
cdef	—	—	+	+	+	+	—
aceg	+	—	+	—	+	—	+
bcfg	—	+	+	—	—	+	+
abcd	+	+	+	+	—	—	—

— low level.
+ high level.

variable itself. Table II shows a listing of the experimental conditions which were used in the experiment. Some of the benefits of the shorthand notation can now be noted. On the left hand side of this table there are listed combinations of letters. These combinations of letters spell out the treatment conditions that should be used for each of eight runs. There are just two levels for each of the seven different variables. Therefore, in a shorthand notation, the treatment conditions may be represented in the first column by the presence or absence of a particular letter. For instance, if the second experimental run is considered, it can be seen

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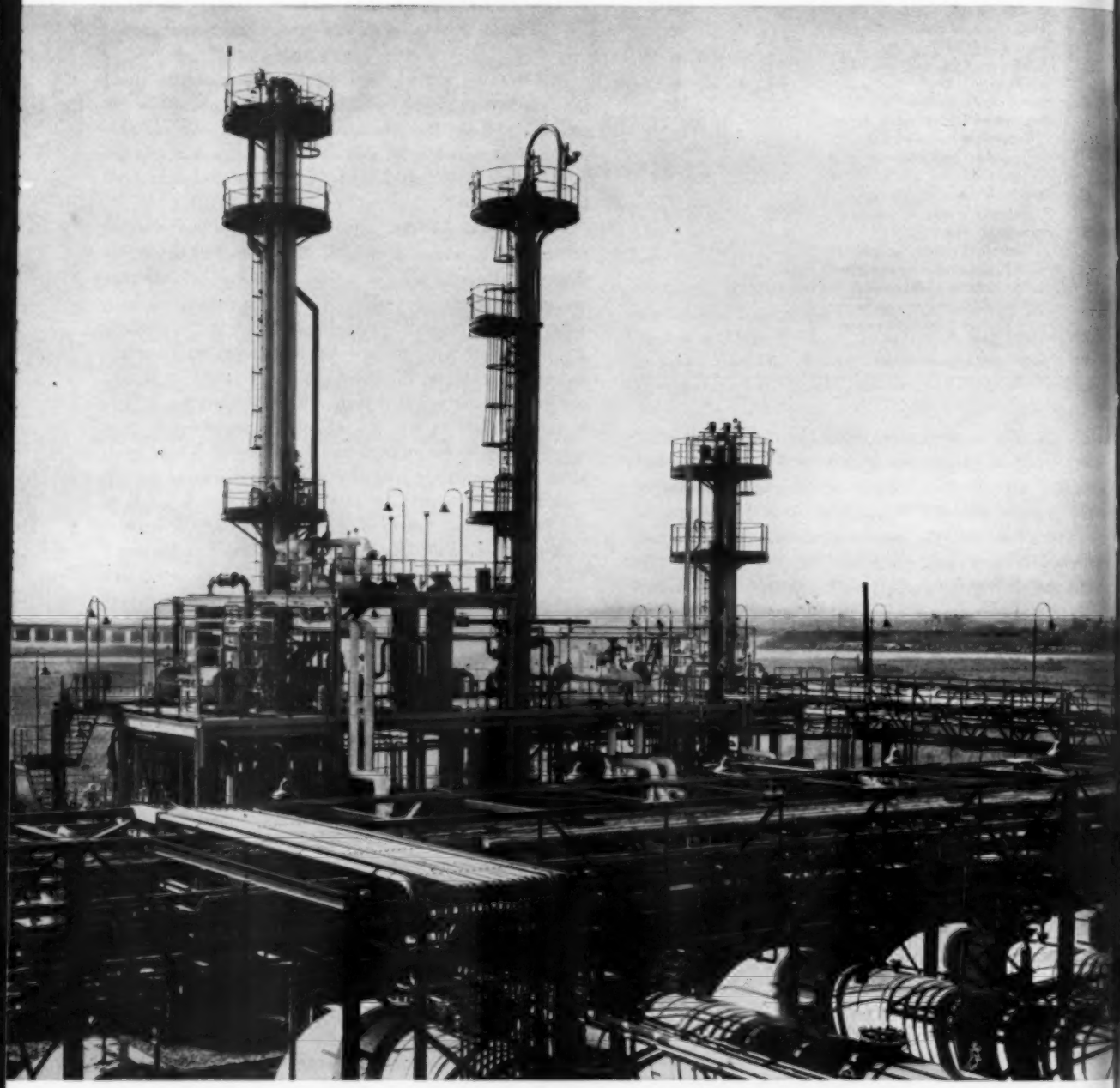

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that the letters a, d, f, and g are present. This shows that this particular experimental run should include variables A, D, F, and G at the higher level while the remaining variables should be held at the low levels.

The right hand portion of this table shows how to use the shorthand notation to construct a table listing the exact experimental conditions for each of the seven variables. In the previous example, variables A, D, F and G were at the high level. This is now indicated by the plus sign below those variables. The presence of minus signs signifies low level conditions. The selection of these eight experimental treatment conditions from the possible total of 128 such runs is based on statistical theory. They are selected so that one may estimate the relative effect of each of the seven variables independent of one another.

An important characteristic of this set of eight runs is that each of the variables is evaluated four times at the high level and four times at the low level. This shows that a certain degree of balance has been built into the experiment. Through this balance. it is possible to compare four high results with four low results for each of the seven variables in only eight runs. If the old one factor at a time approach had been considered it would be impossible to obtain the type of precision that is received in so few runs.

Table II, then, shows abstractly the experimental conditions for each of the seven variables. The high and low levels are represented by plus and minus signs.

TABLE III

Actual Experimental Conditions
Comparison of Fluorinated Hydrocarbons

Treatment Combinations (Run Conditions)	Run No.	Variables A	B	C	D	E	F	G
(1)	1	8	70/30	1	S	2	40/60	5
adfg	2	12	70/30	1	G	2	57/43	9
bdeg	3	8	90/10	1	G	10	40/60	9
abef	4	12	90/10	1	S	10	57/43	5
cdef	5	8	70/30	4	G	10	57/43	5
aceg	6	12	70/30	4	S	10	40/60	9
bcfg	7	8	90/10	4	S	2	57/43	9
abcd	8	12	90/10	4	G	2	40/60	5

Key: See Table I.

Table III shows the construction of the final experimental conditions for this design plan. The strategy of the experiment is the preparation of these eight experimental runs such that they then may be evaluated for as many different final property characteristics as is desired.

For comparison with the basic design, in which fluorinated hydrocarbons were used, four of the formulations were pressurized with liquefied petroleum gas. The purpose of this additional study was to obtain information regarding the relative effect of two different propellant types. Table IV shows the experimental conditions for this portion of the work.

Concentrate Preparation and Evaluation Methods

Table V shows the charge weights used in preparing

TABLE V

Charge Weights and Analytical Values

Run No.	Identification	Triple Pressed Stearic Acid Soap	FFA	Total	Coconut Oil Fatty Acid Soap	FFA	Total	Glycerin Dry	As is	70% Sorbitol Solution Dry	As is	TEA	Water From Soap	In Polyol	Added	Total	Shaving Cream Concentrate Grams	Propellant Type	Approx. %	Grams	Ml
1	8% TEA soap, 70/30, 1% FFA, 2%S	3.77	0.70	4.47	1.62	0.30	1.92	-	-	2.00	2.84	2.99	0.38	0.84	87.78	89.00	161.5	40/60	5	8.5	6.0
1A	8% TEA soap, 70/30, 1% FFA, 2%S																161.5	LPG	5	8.5	15.6
2	12% TEA soap, 70/30, 1% FFA, 2% G	5.66	0.70	6.36	2.43	0.30	2.73	2.00	2.08	-	-	4.49	0.58	0.08	84.34	85.00	154.7	57/43	9	15.3	11.0
3	8% TEA soap, 90/10, 1% FFA, 10%G	4.91	0.90	5.81	0.55	0.10	0.65	10.00	10.38	-	-	2.92	0.38	0.38	80.24	81.00	154.7	40/60	9	15.3	10.8
3A	8% TEA soap, 90/10, 1% FFA, 10%G																154.7	LPG	9	15.3	28.0
4	12% TEA soap, 90/10, 1% FFA, 10%S	7.37	0.90	8.27	0.82	0.10	0.92	-	-	10.00	14.18	4.38	0.56	4.18	72.25	76.99	161.5	57/43	5	8.5	6.1
5	8% TEA soap, 70/30, 4% FFA, 10%G	3.77	2.80	6.57	1.62	1.20	2.82	10.00	10.38	-	-	2.99	0.38	0.38	77.24	78.00	161.5	57/43	5	8.5	6.1
6	12% TEA soap, 70/30, 4% FFA, 10%S	5.66	2.80	8.46	2.43	1.20	3.63	-	-	10.00	14.18	4.49	0.58	4.18	69.24	74.00	154.7	40/60	9	15.3	10.8
6A	12% TEA soap, 70/30, 4% FFA, 10%S																154.7	LPG	9	15.3	28.0
7	8% TEA soap, 90/10, 4% FFA, 2%S	4.91	3.60	8.51	0.55	0.40	0.95	-	-	2.00	2.84	2.92	0.38	0.84	84.78	86.00	154.7	57/43	9	15.3	11.0
8	12% TEA soap, 90/10, 4% FFA, 2%G	7.37	3.60	10.97	0.82	0.40	1.22	2.00	2.08	-	-	4.38	0.56	0.08	81.35	81.99	161.5	40/60	5	8.5	6.0
8A	12% TEA soap, 90/10, 4% FFA, 2%G																161.5	LPG	5	8.5	15.6

Key: See Table 1

Triple Pressed Stearic Acid	Coconut Oil Fatty Acid				Fluorinated Hydrocarbons		Liquefied Petroleum Gas
Emersol® 132	Neo-fat® 255	Glycerin USP	Sorbo®	Triethanolamine	Freon® 12/114 40/60	Freon® 12/114 57/43	Isobutane /Propane Blend
Emery Industries	Armour & Co.	Marshaw	Atlas Powder Co.	Carbide & Carbon	E. I. duPont de Nemours Co.,(Inc.)	E. I. duPont de Nemours Co.,(Inc.)	Phillips Petroleum Company
X-Anal 4601	Lot 1419 1	Chemical Co.	Lot 1276	S/0041/CAB			
Acid No. 206	Acid No. 253	H_2O Content	H_2O Content	Alkalinity	Pressure, 39.9 psig @ 70°F	Pressure, 49.5 psig @ 70°F	Pressure, 46 psig @ 70°F
Sap. No. 210	Sap. No. 258				115.0 psig @ 130°F	135.4 psig @ 130°F	128 psig @ 130°F
Iodine No. 0.11	Iodine No. 7.88	3.70%	29.5%	7.15 meq/gram	Density, 1.412 g/ml @ 70°F	Density, 1.387 g/ml @ 70°F	Density, 0.546 g/ml. @ 70°F

TABLE IV

Actual Experimental Conditions

Comparison of Fluorinated Hydrocarbons with Liquefied Petroleum Gas

Treatment Combinations (Run Conditions)	Run No.	Variables A	B	C	D	E	Y	Z
(1)	1a	8	70/30	1	S	2	LPG	5
adyz	2	12	70/30	1	G	2	57/43	9
bdez	3a	8	90/10	1	G	10	LPG	9
abey	4	8	70/30	4	G	10	57/43	5
cdey	5	12	90/10	1	S	10	57/43	5
acez	6a	12	70/30	4	S	10	LPG	9
bcyz	7	8	90/10	4	S	2	57/43	9
abcd	8a	12	90/10	4	G	2	LPG	5

Key: See Table I.

the shaving cream concentrates and in pressurizing them, as well as data on the raw materials used.

Thirteen thousand gram batches of each shaving cream concentrate were prepared in a jacketed three gallon Gifford-Wood Agi-Mixer. The stearic and coconut oil fatty acids were placed in the reaction vessel and heated to 95°C. by means of steam circulating through the jacket. The countercurrent paddles, at 50 rpm and the homogenizer, at a medium speed, were then put into operation. Agitation was continued throughout the preparation. The water was heated to 98-100°C. and the triethanolamine and polyol were then added to it. The water phase was added slowly through a jacketed 3000 ml. separatory funnel at approximately 600 ml. per minute. Steam heating was continued during the alkali addition, approximately 20 minutes, and for ten minutes following addition. After this period, cold water was circulated through the jacket. When the batch reached 30°C., it was removed from the Agi-Mixer. Runs 6 to 8 were not homogenous, and were agitated for five minutes with the homogenizer at high speed before removal. Part of each batch was reserved for testing and the remainder was pressure packaged.

The following test methods were used in studying the properties of the shaving cream concentrates:

VISCOSITY

Three sixteen ounce bottles were filled with the sample of shaving cream concentrate immediately after preparation. The viscosity of the product was determined using a Brookfield Model HAT viscometer, 50 rpm, using spindle 1 in most cases, but spindle 2, 3, or 4 where high viscosities were encountered. The value recorded was the average of readings made after every fifth revolution. The samples were observed after a storage period of one week and two months at room temperature.

pH

Approximately 75 ml. of the shaving cream concentrate was placed in a 150 ml. beaker. The pH was run by the well-known potentiometric method, using a Beckman Glass Electrode pH meter, Model H 2.

DENSITY

A weighted vessel of known volume was filled with shaving cream concentrate immediately after preparation. The weight of the filled vessel was noted and the tare subtracted from it, giving the weight of shaving cream added. This weight divided by the volume of the vessel yielded the density of the cream.

STABILITY

A two ounce bottle of shaving cream concentrate was stored at room temperature, one ounce bottle at 50°C., and a one ounce bottle was subjected to alternate freezing—(approximately—10°C.) thawing (room temperature) cycling. The degree of separation was noted after one month at room temperature and at 50°C., and after four freezing-thawing cycles.

Pressurized Cream Loading and Evaluation Methods

For pressure packaging, the shaving creams were weighed into six-ounce Crown Spra-Tainer® seamless cans, 2 P type, using the amount indicated on Table V. Thirty cans were packaged for each run. After purging each can with the appropriate propellant, a Precision Valve Corp. valve, model NN, Body A-4, 4" dip tube was inserted into the can and crimped in place using an Alpha air powered can crimper. Before adding the shaving cream concentrate, the tare weight of the can plus valve was noted. The cans were then taken to a private label aerosol loader, where the appropriate propellant was pressure filled into the can using approximately the volume of propellant indicated in Table V. The total charge (shaving cream plus propellant) was 170 grams. All cans were run through a water bath at 130° F. (about four minutes exposure) to test for leakage, distortion, or other defects.

The cans were then weighed. The actual percentage of propellant was calculated. Cans containing 5.3 to 5.6% and 9.3 to 9.6% propellant were chosen for evaluation. Each can was then equipped with a Precision foam spout, Model 4A so that dispensation and foam properties could be measured. The following test methods were used in evaluating the pressurized shaving creams:

Shaves Per Can, Residue in Can After Exhaustion

Three cans of pressurized shaving cream from each run were tested. Twice daily, in the morning before nine o'clock and in the evening after four o'clock, each can was shaken ten times and then dispensed into a vessel with a capacity of about 40 ml., the volume of a golf ball, which was the quantity recommended by one manufacturer for each shave at the time the study was run. This volume is probably larger than that usually dispensed in actual use. This procedure was repeated until the charge was exhausted. The number of 40 ml. shaves obtainable from each can was recorded. The weight of the can (foam spout removed) was noted, and by subtracting the tare of the can and valve, the

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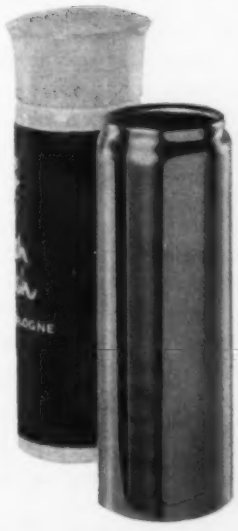

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** Peerasol is a tradename of the Peerless Tube Company.*

TABLE VI

Evaluation of Concentrates

Run No.	Identification	Viscosity cps at 25° C 1 Week	2 Months	pH	Density Grams/ml	Stability Room Temp. 1 Month	50° C 1 Month	4 Cycles Freezing-Thawing
1	8% TEA soap, 70/30, 1% FFA, 2% S	26.0	24.0	8.3	1.01	25% H_2O separation	Stable, gelled	5% H_2O separation
2	12% TEA soap, 70/30, 1% FFA, 2% G	35.6	34.4	8.2	1.03	20% H_2O separation	10% H_2O separation	30% H_2O separation
3	8% TEA soap, 90/10, 1% FFA, 10% G	118.8	260.4	8.4	1.03	Stable, heavy lotion	Stable, gelled	Stable, lotion
4	12% TEA soap, 90/10, 1% FFA, 10% S	101.6	99.2	8.3	1.03	25% H_2O separation	Stable, gelled	Stable, lotion
5	8% TEA soap, 70/30, 4% FFA, 10% G	542.4	644.8	8.2	1.02	Stable, heavy lotion	Stable, gelled	Stable, lotion
6	12% TEA soap, 70/30, 4% FFA, 10% S	88.8	142.0	8.1	1.01	40% H_2O	Stable, gelled	25% H_2O separation
7	8% TEA soap, 90/10, 4% FFA, 2% S	2748.0	3468.0	8.4	0.99	Stable, very soft cream	Stable, gelled	Stable, lotion
	12% TEA soap, 90/10, 4% FFA, 2% G	257.6	204.0	8.4	0.97	20% H_2O separation		

shaving cream (or shaving cream plus trapped propellant) remaining in the can was calculated. The percentage of residue in the can based on the total charge was calculated. The total foam volume from a given amount of shaving cream concentrate can be calculated by multiplying the number of shaves per can times 40 ml. per dispensation. These tests were started one week after preparation of the shaving creams.

Foam Density

Three cans of pressurized shaving cream from each run were tested. Each can was shaken ten times before dispensing the cream. A weighed vessel of known volume was filled with the cream to be tested. The weight of the filled vessel was noted and the tare subtracted from it, giving the weight of shaving cream added. This weight divided by the volume of the vessel provided the foam density. Observations were made after one week and one month at room temperature.

Discussion Foam Strength (Foam Consistency)

Three cans of pressurized shaving cream from each run were tested. Each can was shaken ten times before dispensing the cream. The cream was filled into a 4 ounce opal jar and the foam strength observed as the average dial reading using a Brookfield Model HAT viscometer 20 rpm, T type spindle A, Helipath stand. Observations were made after one week and five months at room temperature using new cans for each determination.

Drying Time

Three cans of pressurized shaving cream from each run were tested. Each can was shaken ten times before dispensing the cream. About 40 ml. of the cream was dispensed onto a glass plate. The drying time was observed by lightly touching the surface of the cream every half minute, noting the time at which no peak formed. Tests were run after a one month storage period at room temperature.

Bubble Size

Three cans from each run were tested after a one week storage period at room temperature. Each can was shaken ten times before dispensing the cream. A thin layer of cream was spread on a microscope slide (no cover glass) and observed under a compound microscope fitted with a 10X objective and a calibrated filar micrometer eyepiece. The diameter in mm. of the most frequent bubble size was noted on the foams as dispensed and after ten minutes. The log of the percent change in bubble size was used in the analysis of the data.

Table VI shows the results of viscosity, pH, density, and stabilty tests on the shaving cream concentrates. Stability results after one month at room temperature and at 50°C., and after four freezing-thawing cycles were assigned the following numerical code:

Code	Stability
0	Separation
1	Stable, gelled
3	Stable, cream
5	Stable, lotion

Since three observations were made, the total of the assigned numbers was used in analysis of stability. Table VII shows the results of the tests on the shaving cream foams. Statistically, the properties evaluated are termed responses.

Discussion

Each of the variables was run at the high level on four of the experiments and at the low level on the other four experiments. Such balance allows the calculation of the main effects of each of these variables rather easily. The results from the four runs where a particular variable level was high and the results from the four runs where that variable level was low are each averaged. The difference between these two results gives an estimate of the effect of a particular variable on the property under consideration.

In actual practice there are systematic methods[20] by which it is relatively easy to calculate the main effects of these seven variables within the experimental plan. For practical purposes of consideration, each of these effects is determined by the difference between the high and low level runs in the experiment. Tables VIII to

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TABLE VII

Evaluation of Pressurized Creams

Run No.	Identification	Shaves Per Can	Residue % of Original Total Charge	Foam Density 1 Week	Foam Density 1 Month	Foam Strength 1 Week	Foam Strength 5 Months	Drying Time, Minutes 1 Month	Bubble Size Most Frequent Size 1 Week As Dispensed	Bubble Size Most Frequent Size 1 Week 10 Minutes
1	8% TEA soap, 70/30, 1% FFA, 2% S, 40/60, 5%	22	12.3	0.113	0.117	28.1	29.2	29.0	0.065	0.082
1a	8% TEA soap, 70/30, 1% FFA, 2% S, LPG, 5%	68	2.7	0.051	0.043	30.5	31.0	31.2-44.0	0.080	0.113
2	12% TEA soap, 70/30, 1% FFA, 2% G, 57/43, 9%	46	3.4	0.050	0.060	46.3	45.4	9.7	0.092	0.126
3	8% TEA soap, 90/10, 1% FFA, 10% G, 40/60, 9%	31	5.8	0.059	0.072	53.5	46.5	16.7	0.048	0.058
3a	8% TEA soap, 90/10, 1% FFA, 10% G, LPG, 9%	109	2.7	0.033	0.035	45.6	45.5	3.5	0.063	0.097
4	12% TEA soap, 90/10, 1% FFA, 10% S, 57/43, 5%	22	8.2	0.089	0.114	49.2	49.5	34.8	0.032	0.043
5	8% TEA soap, 70/30, 4% FFA, 10% G, 57/43, 5%	22	7.7	0.108	0.109	37.2	35.5	20.8	0.067	0.102
6	12% TEA soap, 70/30, 4% FFA, 10% S, 40/60, 9%	36	4.8	0.058	0.067	44.3	49.3	5.0	0.050	0.061
6a	12% TEA soap, 70/30, 4% FFA, 10% S, LPG, 9%	75	13.7	0.030	0.030	43.7	39.2	5.5	0.069	0.057
7	8% TEA soap, 90/10, 4% FFA, 2% S, 57/43, 9%	32	10.3	0.064	0.067	47.9	44.3	2.3	0.040	0.073
8	12% TEA soap, 90/10, 4% FFA, 2% G, 40/60, 5%	19	13.3	0.090	0.118	43.2	44.8	18.8	0.032	0.052
8a	12% TEA soap, 90/10, 4% FFA, 2% G, LPG, 5%	29	11.0	0.063	0.050	36.8	37.9	5.0	0.074	0.095

TABLE VIII

Charge Viscosity

1 week	2 months
489.9 Average	609.6 Average
734.1 A	—979.4 A
633.3 B	796.6 B
838.7 C	1010.2 C
—502.5 D	—647.4 D
—553.9 E	—646.0 E

TABLE IX

Stability

Room Temperature—1 month	50° C—1 month
1.625 Average	0.875 Average
—1.583 A	—0.250 A
0.750 B	0.250 B
0.750 C	0.250 C
1.750 D	—0.250 D
1.750 E	0.250 E

Freezing-Thawing 4 cycles
3.125 Average
—1.250 A
3.750 B
1.250 C
1.250 D
1.250 E

TABLE X

Shaves Per Can

28.7 Average
4 A*
—5.7 B*
—3.3 C*
1.7 D
—3.5 E*
3.7 F*
1.5 G
95% CL = ± 1.2

XXI give the complete tabulation of the statistical data for each response. They list the average for the experiment and the estimated effects of each variable.

In most cases, three cans within an experimental run were individually tested for each property. An indication of can to can variation is shown by the confidence limits listed under the proper responses. In the actual experiment, in addition to can to can variation, slight variations would be expected in repeat make-ups of a particular formulation. This is not included in the confidence levels listed, since only cans within each formulation were checked for reproducibility. Therefore,

TABLE XI

Residue

8.2 Average
—1.6 A
2.3 B
1.6 C
—1.3 D
—3.2 E*
—1.7 F
—4.3 G*
95% CL = ± 3.0

TABLE XII

Foam Density

1 week	1 month
0.079 Average	0.091 Average
—0.014 A	—0.002 A
—0.007 B	0.005 B
0.002 C	—0.001 C
—0.004 D	—0.002 D
—0.001 E	—0.000 E
—0.002 F	—0.006 F
—0.042 G*	—0.048 G*
95% CL = ± 0.008	95% CL = ± 0.006

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TABLE XIII
Foam Strength

1 week	5 months
43.7 Average	43.1 Average
4.1 A*	8.4 A*
9.5 B*	6.4 B*
—1.1 C	0.8 C
2.7 D	0 D
4.7 E*	4.3 E*
2.8 F	1.2 F
8.6 G*	6.6 G*
95% CL = ± 1.0	95% CL = ± 0.9

TABLE XIV
Drying Time

1 month
17.1 Average
—0.1 A
2.0 B
—10.8 C*
—1.3 D
4.4 E*
—0.5 F
—17.5 G*
95% CL = ± 1.2

TABLE XV
Bubble Size

Log % difference as dispensed, ten minutes 1 week
1.399 Average
0.174 A
0.089 B
0.461 C
—0.021 D
—0.308 E
0.499 F
—0.213 G
95% CL = ± 0.807

it would be expected that these confidence limits might be smaller than the proper confidence limits that would represent random variations from preparation to preparation of formulation.

The general interpretation attached to confidence limits is the fact that just due to chance variations, the terms of a particular table might be expected to exhibit some deviation from zero. The purpose of the statistical analysis of an experiment is to determine which results are due to chance variations and which results are attributed to the variables that have been evaluated in the experiment. For example, in Table XII showing foam density data, G is considerably larger than the confidence limits and considerably larger than any of the other terms within foam density. Therefore, it is concluded that G contributes a real effect in foam density properties. This reasoning is continued throughout the evaluation of the different sets of response data. The effect of the different factors may be evaluated by noting those situations where the result has been starred.

Figure 1 shows graphically the interpretation that

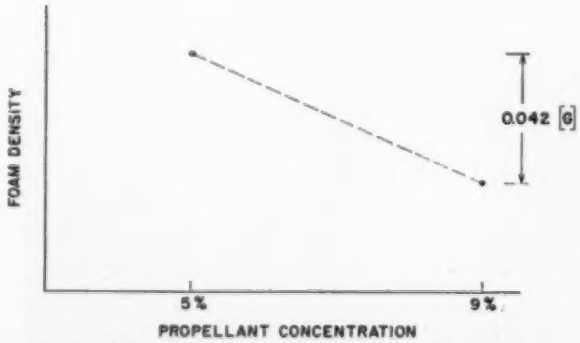
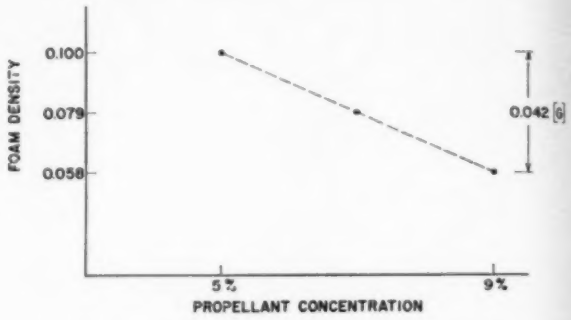


Figure 1—Effect of propellant concentration on foam density.

should be placed on the effect of propellant concentration. The value—0.042 represents the effect on foam density when changing propellant concentration from 5% to 9%. Since the sign of G is negative, this implies that increasing propellant concentration decreases foam density. The absolute difference between the high and low level of foam propellant concentration is 0.042.

Many times, in screening experiments the important facet is merely knowing the magnitude and direction of the effects from different variables. However, in some instances, it might be desirable to determine the resulting properties expected with a particular combination



$9\% = \text{AVERAGE} + \frac{1}{2}G = .079 + (-.021) = .058$
$5\% = \text{AVERAGE} - \frac{1}{2}G = .079 - (-.021) = .100$

Figure 2—Calculation of foam densities at two propellant concentrations.

of variable properties. In Figure 2 the calculation of foam densities that would be expected at the two different levels of propellant concentration is shown. To obtain the expected foam density at 9%, add one half the effect of G, the propellant concentration, to the average of the experiment. Likewise, to determine foam density at 5%, one half G is subtracted from the average. This simple calculation estimates the expected foam density for these two concentrations.

Following this basic calculation procedure, estimates of some response may be constructed in cases of two, three or more significant effects. The formulation would not be optimum but would indicate the general direction in which to proceed to improve a particular formulation.

As an example, variables A, B, C, E and F exhibited significant effects on shaves per can in Table X. An estimate of best formulations within the experiment can be determined from:

Average + ½ (A—B—C—E+F).

Here variables A and F are at high levels and B, C and E are at low levels. The resulting formulations should give all positive contributions such as:

$28.7 + \frac{1}{2}[4.0 - (-5.7) - (-3.3) - (-3.5) + 3.7]$
$28.7 \quad \frac{1}{2}(4.0 + 5.7 + 3.3 + 3.5 + 3.7) = 38.8$

shaves per can.

In addition to the effects of a particular variable itself,

(*Continued on Page* 79)

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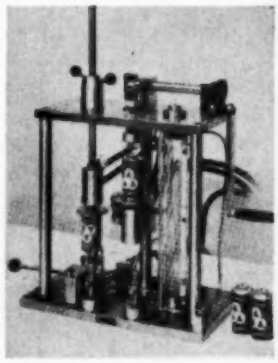

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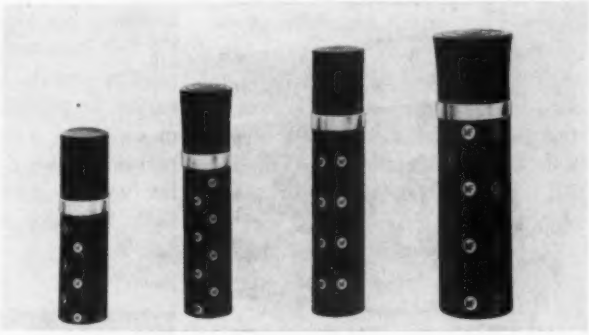
RAPPERSWIL/SG SWITZERLAND

Ensactin, a spray product for athlete's foot and other superficial fungus infections, has been introduced by the Ayerst Laboratories Division of American Home Products Corp. Peerless Tube "brush finish" aluminum container is equipped with a Precision valve and a Gilbert Plastic overcap. G. Barr & Co. is the custom filler.

Golden Chance, Woodsy, Exotic, and **Floral** have all been introduced in new cut-glass-style uncoated bottles by Harriet Hubbard Ayer, Inc., New York. V.C.A., Inc., Bridgeport is supplying "B8F" valve and "AC4" mechanical breakup actuator.

Misty Garden is a 3-ounce spray cologne just introduced by Fuller Brush Co., Hartford, Conn. It utilizes an Owens-Illinois coated glass bottle, with an Owens-Illinois cap and a "B8F" valve and mechanical break-up actuator supplied by V.C.A., Inc.

The **Princess** is a new line of inexpensive aerosol containers for dispensing colognes and other products just developed by Metal Fabrications, Inc., 202 Cherry St., Waterbury, Conn. Five-part unit includes actuator button, ring, valve, custom finish aluminum outer container and flared or straight.



Koolz is a product developed by DeMert & Dougherty, Inc., Chicago to "cool and relax" tired feet. A dry spray, it may be applied to fabrics, leather, plastic, metal and canvas. It comes in 8 or 16-ounce containers equipped with Precision valves.

NEW PRODUCTS AND PACKAGES

Communications:

major administrative challenge for the 1960's

By Charles E. Beach*
John C. Stalfort & Sons, Inc.
Baltimore, Md.
President, Chemical Specialties Mfrs. Assn.

THE complexion of the chemical specialties industry changes in an interesting way from day to day. We are constantly confronted with problems of shrinking profits, stiffer competition from outside industries, and shifting market conditions. While these and similar problems must be faced by each company in its own way, they also challenge the industry as a whole.

I should like to talk to you here about a challenge, facing management in the 60's, that I feel is of particular importance. This involves the problem of internal communications and how people respond to our meaningful words and actions. Let us pose three questions. First, how do communications relate to employee relations and ultimately the productivity and profits of our companies? Second, how can management meet the requirements of our day in the field of internal communications? And finally, how can we improve our methods of circulating information within an organization?

In order to appreciate the significance of this challenge, let's look for a moment at what economists are telling us about the future of American business. We hear that our economy is in a period of long term growth. Within 15 short years, or about 1975, this nation will have a population of 235 million, an increase of 31% over today's 180 million.

Over the same period America's gross national product will reach $940 billion, or double that of 1960, according to McGraw-Hill economists. Family income will be up 40%, and significantly, much of this gain will be achieved by movements from lower income to middle income groups. We will be building new homes at the rate of 2 million a year, 40% of which may be prefab. A half million houses a year will be modernized. We must never forget, in our own interest, that all of these houses must likewise be furnished and kept up. And in many instances, they must be furnished and kept up with products that only chemical specialties manufacturers can provide.

On our new system of super highways, nine million new cars every year will make our nation more mobile than ever before. Because consumer needs can be met first, only by industrial output, it is important to note that capital expenditures will, by 1975, be at the rate of about $70 billion a year, almost twice that of today.

In brief, the outlook for the chemical specialties manufacturer and our opportunities in terms of new and expanding markets are excellent, if not exciting.

NOW let us pause for a moment and trace the developments in the field of communications and ask ourselves if we are keeping pace with the economic advancements of our time.

At the turn of the century America marched ahead confident that it could do anything, build anything, finance anything. By the end of World War I we were becoming an industrial giant. In part, this was a result of the fact that we were learning how to talk and be heard by the rest of the world. The invention of the telephone and telegraph provided a means by which to communicate quickly. This era produced today's modern press association and, significantly, an American magazine for the first itme reached the million circulation mark. Technological advances in printing and rising levels of education were bringing us to a period of mass communications. The intervening years have brought us radio, television, and communications satellites.

Tremendous strides have been

* The Presidential Address given before the 47th annual meeting of the CSMA in the Drake Hotel, Chicago, on May 17.

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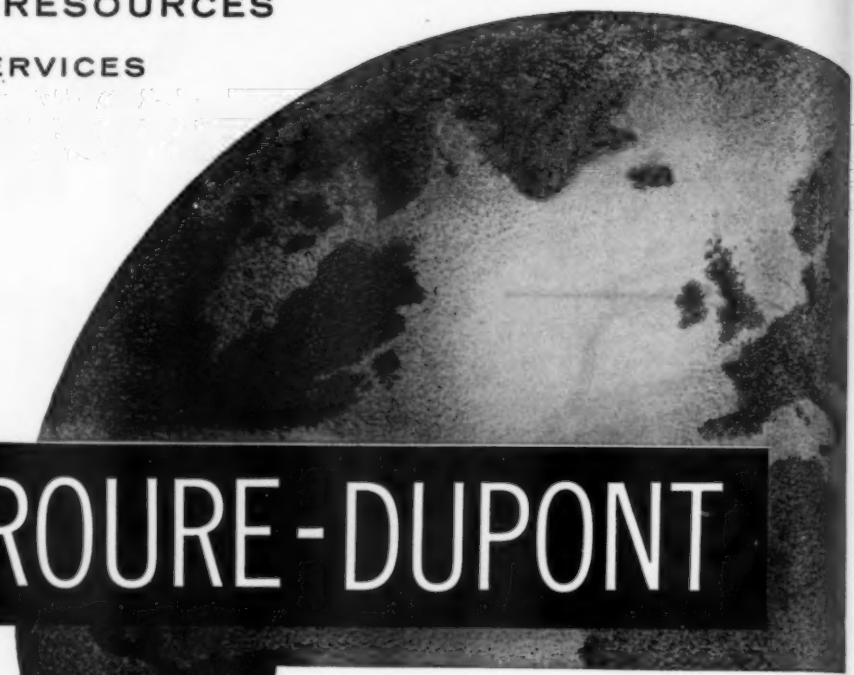

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made in the science of communication. But have we really made comparable advances in the art of communication? Recently, a friend of mine complained that he is having trouble "talking" to his teen-age son. He said, "I just don't seem to be able to get through to him. We don't seem to speak the same language."

Is there a breakdown in the human aspects of communications today? Could it be that the smaller the world grows, the faster the pace of industry, the more complex our daily lives become, the closer we get to the *possibility* of a breakdown? Nations are unable to communicate with each other, husbands and wives and children are having trouble talking to each other. It's no surprise in business that we often fail to reach each other.

The first matter I want to examine is the role communications plays in a business organization especially in developing employee morale and fostering job satisfaction. Certainly, an employee's satisfaction, or dissatisfaction with his job, will reflect itself in his productivity and in his dealings with his fellow workers, the general public, and perhaps your customers.

What are the factors which go to make up job satisfaction? First, clearly defined company objectives, second, mutual confidence between management and employee, third, management's capacity and ability for leadership, and fourth, management's recognition of performance.

The first of these simply means letting the right hand know what the left hand is doing. Where is the company going and why? For instance, is the installation of a new machine a sign of a newly won contract, will it be a start of a program of plant expansion, or is management attempting to automate and *do away* with the employee? There's a great deal of talk about automation but most of us recognize the fact that our companies are not quite as automated as it might appear from accounts in today's newspapers.

All too often automation has become a fancy word for advanced mechanization whose ultimate effect has meant the speeding up of production. And the faster the production, the greater the need for effective quality control and effective maintenance. This, in turn, can be accomplished only by competent employees.

People sometimes forget that an important measure of industrial progress is productivity, and as productivity increases, each worker becomes more important. There exists the distinct opportunity for upgrading jobs and wages, and job satisfaction.

The second of these elements, confidence in management, is reflected in its interest and awareness to situations, both internally and in the market place. Such confidence contributes to the stability and sense of security in the employee. Seeming confusion and indecision makes management *suspect* in the eyes of employees. Instructions that are continually changed and countermanded make employees wonder if the company knows *where* it is going and if it has any goal at all.

Unfortunately, the average employee cares little about company profits. He feels his role in the big picture is too small to really count for much. However, he is capable of recognizing efficiency, particularly on the part of those immediately above him.

I believe all of us understand the importance of the third factor, leadership. Without it we have no objective, no course, and no organization at all. Management and leadership, to the employee, are synonymous. How many times have you made a rule that was never followed, not that anyone said they wouldn't follow it, and no one ever rescinded it? No smoking signs are a classic example of this kind of communication. Signs don't take into consideration the employee's response, which might be "I'll smoke if I want to." In this case he's communicating with you and in a most direct form by defying your rule, your leadership.

Employees need to know what's going on, if they are to get satisfaction in a job. For example, there is a story of the worker who was hired to dig a hole. After digging that hole he was told to fill it up and dig another one. After digging the second hole, and being told to fill it up, again, the worker was ready to punch the foreman in the nose. And all because the foreman hadn't told him the reason for digging the holes, and then filling them up. The company was looking for a long buried water pipe. This was the only way to find it.

The employee has a right to know about the company's product, its history, its general policies, and its position in the community. He wants to know how his performance rates, the relative position of his job with respect to the whole company, and his chances for advancement, and training.

BECAUSE communication is a two-way street, management also must be a "good listener." Whether planned or not, information will be transmitted to it through other than organized channels. The president of of a big manufacturing concern recently gave example to this fact. He related the story of a major policy decision made in a closed board meeting. Only a few minutes after leaving the meeting an employee discussed this decision with him on the floor of the plant. Management must recognize that grapevines exist, but must never let them become a replacement for formal and established lines of communication.

In survey after survey job satisfaction and the desire for recognition have been rated as the most important aspects by workers in evaluating their jobs. One recent survey listed the following factors in order of their importance to the employee:

Recognition, satisfaction, nature of the work, leadership, security, pay, promotion, working conditions, excessibility, and fringe benefits.

One can never begin too early to instill these values in an employee through proper training methods.

(*Continued on Page* 75)

news of pressurized packaging

Max Factor Buys Corday

Max Factor & Co., Hollywood, Calif. cosmetics manufacturer, has just acquired Parfumerie Internationale Corday, Paris, and its subsidiaries for a cash sum reported to be "less than $5 million." Included in the subsidiaries are Parfums Corday, U. S. subsidiary of the firm.

In an announcement from its California headquarters, Factor said Corday will be operated as a wholly-owned subsidiary, retaining the present management. Under the new set-up, Factor's larger merchandising, marketing and advertising facilities will be made available to Corday executives. At least in the U. S. market, a Factor spokesman said, Corday will continue to handle its own production and distribution. Overseas, some of the Corday activities might be incorporated into Factor's larger distributional organization.

Both Factor and Corday have a number of aerosol cosmetics on the market. Corday markets "Toujours Moi", "Fame", "Trapeze", "Jet" and other perfumes and colognes. Corday had been owned by Corday President Benson Storfer and his family.

•

Winer Accepts African Post

Abraham Winer, former owner and president of Puritan Distributing Co.,

Abraham Winer

Boston filler now called Puritan Aerosol Corp., has been selected as an advisor in small business practices to the Government of the Federation of Rhodesia and Nyasaland, and to business organizations and small business proprietors throughout that area. The appointment is for a period of four months.

In February, Mr. Winer and his wife returned to the U. S. from an around-the-world trip which lasted seven and a half months. Since then he has been occupied by his work as a member of the development board of the Retina Foundation, Boston, largest eye research center in the world, which is constructing a new building. He is scheduled to leave for his new post in late September.

•

SBA Grants Aerosol Loan

John E. Horne, Administrator of the Small Business Administration, has announced approval of a $240,500 loan to the Rochester Area Development Corporation of Rochester, Mich., in support of a project which will provide an estimated 100 new jobs in an area of substantial unemployment. The current project of the development company will cost approximately $303,000 for the acquisition of land, conversion and construction of buildings and the purchase of machinery and equipment for the Rochester Aerosol Corp., a new packaging plant for non-food items, including hair sprays, deodorants and shaving cream. Opening of the new plant reportedly will provide 35 new jobs. When in full operation it will employ 100 persons.

SBA's loan to the development company will carry a 4% interest rate instead of the usual 5½% rate since Rochester is in an area of substantial labor surplus. The loan is the fourth made in Michigan in support of projects to assist small business concerns.

Emson Adds to Staff

Emson Research, Inc., Bridgeport, Conn., manufacturers of metering and conventional aerosol valves, recently

Stearns Barnett

announced the appointment of Carl Stearns to head its engineering department. A chemical engineer, he was formerly in the Lederle Laboratories product research and development department, where he helped establish that company's aerosol filling operations.

At the same time Emson announced that Raymond Barnett, formerly of Revlon, Inc., has joined the company as a sales representative. He will specialize in cosmetic and toiletry markets for sale and technical service of Emson valves and aerosol specialties.

Mr. Stearns was educated at New York University and Columbia University. He has many patents to his credit on machine and formulation developments, and has published several technical papers, including "Pharmaceutical Filling of Aerosol Containers."

•

Strouse Builds Second Plant

Strouse, Inc., Norristown, Pa., is building an additional 36,000-square-foot plant at nearby Plymouth Township, Pa., to more than double its aerosol production capacity. The building will be financed by a Securities and Exchange Commission registered underwriting group which will offer $600,000 of debentures (due in 1981) and 35,000 shares of stock.

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PANAMA
Agencias W. H. Doel S.A., Apartado 322, 29-15 Avenida 11.

PERU
Imperial Chemical Industries S.A. Peruana Com. e Ind., Casilla 1688, Lima.

PHILIPPINES
Wise & Co. Inc., P.O. Box 458, Manila.

SOUTH AFRICA
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SPAIN
Sociedad Anonima Azamon, Apartado 711, Paseo de la Castellana No. 20, Madrid, 1.

SWEDEN
Holger Andreasen, A/B, Storgatan 7, Orebro.

URUGUAY
Industrias Quimicas Uruguayas "Duperial", Avda. General Rondeau 2050, Montevideo.

VENEZUELA
H. Kern & Co., S.A., Apartado 1587, Edificio Kern, Av. Ppal. Los Cortijos de Lourdes, Caracas.

ICI GENERAL CHEMICALS DIVISION

La Maur Outlines "Temporary" Hair Spray License Offer

LA MAUR, Inc., Minneapolis marketer of hair sprays, last month officially announced its license offer for marketers selling hair sprays based on polyvinyl pyrrolidone and it co-polymers. La Maur's patent on the formulations (U. S. No. 2,871,161) was upheld in a U. S. Court in Minneapolis in January of this year.

The license offer, which grants the licensee a non-exclusive license to make, use, and sell the formulations, is described by the company's attorneys (Leonard, Street, and Deinard of Minneapolis) as "only temporarily available." It is anticipated that La Maur may raise its schedule of fees for those companies who fail to sign up soon, although nothing specifically is said about this in the formal offer. The decision upholding La Maur's patent is currently being appealed by G. Barr & Co., Chicago filler, and it is thought in industry circles that should La Maur *also* win the appeal, increased fees would be used to pay legal costs.

Specifically, the La Maur offer is divided into two price schedules. For containers filled and sold from the date of the patent, January 27, 1959 to the date an agreement is signed, the licensee is required to pay:

- ½-cent for each container up to and including 4 fluid ounces.
- ⅝-cent for each container from 4 to 8 ox.
- ¾-cent for larger than 8, and up to and including 16 oz.

For the period from and after the agreement:

- ¼-cent for up to and including 4 oz.
- ⅜-cent for from 4 to 8 oz.
- ½-cent from 8 to 16.

Although the licensee shall be required to report both containers packaged before and those after the date of agreement, the agreement specifies that such records must be available to La Maur for inspection by a certified public accountant (acceptable to both La Maur and the licensee) during regular business hours.

Among the stipulations agreed to by La Maur is one that promises legal action against a patent infringer or infringers "substantially or harmfully" affecting the business done by the licensee in PVP-based hair sprays; and to bring suit, or maintain an already pending suit, against at least one infringer selected by La Maur.

•

D & O's Fischer Retires

Valentine H. Fischer, vice-president of Dodge & Olcott, Inc., New York essential oils firm, has retired after 44 years with

V. H. Fischer

the firm. An authority and prominent world trader in the essential oils and spice markets, he is a former president of The Essential Oils Association and active member in various allied associations.

•

Pace Adds Sales Reps.

Pace, Inc., Wilmington, Del., custom filler, has announced the appointment of three sectional representatives to handle Pace's private label line of aerosol products in the sanitary supply industry. The representatives and territories are:

Lynn Peavey Co., Overland Park, Kan., covering entire states of Missouri, Iowa and (within 50-mile radius of Kansas City) the states of Nebraska and Kansas.

R. W. Hanselman Co., Jacksonville, Fla., covering Florida and Georgia.

The Sommers Co., Dayton, O., covering Ohio, Indiana, Kentucky and lower Michigan.

•

Mahoney Is Colgate VP

David J. Mahoney, Jr. former president of the Good Humor Corp., has been named executive vice-president of the Colgate-Palmolive Co., New York. He will be responsible for the operation of the Toilet Articles, Household Products, and Associated Products Division.

Fred Lodes Wins CSMA Golf Outing with Score of 76

PLAYING well on his home course, Fred Lodes, CSMA treasurer and president of Lodes Aerosol Consultants, Inc., won the CSMA trophy and all-leather golf bag at the CSMA Golf Outing held June 27 at the Knollwood Country Club, Elmsford, N. Y. Mr. Lodes' score of 76 was matched by M. Dennos of Schenectady Varnish Co., but a pre-agreed-upon match of score cards gave the title to Mr. Lodes. R. J. Hamilton of General Aniline & Film Corp. was third.

Other low gross winners at the outing, which was attended by 139 golfers and guests, were:

J. McCullough, Precision Valve Co.
L. Marvinney, J. B. Williams Co.
E. Johnson, Pennsalt Chemicals.
J. O'Neil, Crown Cork & Seal Co.
J. Gabrielson, Avon Products.
H. Richardson, Foster Forbes Glass.
E. McCauliff, Glycol Chemicals.

First low net (Callaway System) was won by D. Lavelle of Aromatic Products with a 67 net. Other net winners were:

E. Helfer, Powr-Pak, Inc.
W. Gavin, Nopco Chemicals Co.
E. Keenan, Gillette Safety Razor.
A. F. Lindsey, International Flowers & Fragrances.
S. Noto, Sunlac, Inc.
F. Messier, Atlas Supply Co.
K. Kruckman, Precision Valve Co.
J. McCarthy, Lever Bros. Co.
G. Gilroy, Precision Valve Corp.
E. Weierich, Nopco Chemical Co.
S. Schneible, Crown Cork & Seal.
W. O'Brien, Sulton, Inc.
R. Ferrin, B. T. Babbitt & Co., Inc.
L. Cannela, Continental Can Co.
J. Richton, guest.
B. Madsen, Union Carbide Chemicals.
L. Oppenheimer, West Chemical Products, Inc.
G. Moriarity, John H. Breck, Inc.
D. Phillipson, Pennsalt Chemicals.

Prizes for "Early Birds" in the tournament were won by M. Goldner and V. W. Atlas of Warwich Labs, R. Sharp and J. Stoddard of Prentiss Drug & Chemical Co. for being first off the tee. Other "Early Bird" winners were F. Lodes and K. W. Kruckman. Closest to the pin on Knollwood's famous 19th hole was W. Brosie of J. C. Stalfort & Sons, with a shot three feet from the pin. Second was J. Gregory of Newman-Green Co., and third, L. Mason of Continental Can Co.

Fred Lodes holds trophy

The longest drive of 284 yards was made by T. Ellis, guest. Second with a shot of 269 yards was J. Palmer of Peerless Tube Co., and third place was won by R. Sharp of Prentiss Drug and Chemical. A "high gross" score of 143 won a prize for J. Froot of McLaughlin, Gormley & King, and a prize for highest number of strokes on the 18th hole went to S. Ombres, guest.

•

To Use Female Sales Force

Emko Co., St. Louis, developer of an aerosol contraceptive, last month announced that its "Emko Vaginal Foam" will be handled by 20 specially selected female sales representatives. Robert B. Gooden, marketing director of the company, declared that detailing of physicians and retailer customers by women has resulted in "a much higher than average call rate for both physicians and retail drug units — a rate much higher than we have heretofore noticed in our experience in other segments of the drug industry with male personnel."

He reported that more than 500 women were screened, interviewed and tested and scored by the company to select the 20 sales women slated to cover the major marketing areas.

•

Derbins Given New W-L Post

The DuBarry Division of Warner-Lambert Pharmaceutical Co., Morris Plains, N. J., has appointed William H. Derbins to the new position of vice president for marketing.

Bon Ami Licenses AHP

The Bon Ami Co., New York, has concluded a license agreement with American Home Products Corp. whereby American Home Products agreed to pay royalties for use of Bon Ami's patent for aerosol window cleaning composition. The patent, No. 2,955,047, was granted to Bon Ami in October, 1960 and is being used by American Home Products for its "Easy-Off Window Cleaner".

According to Ralph A. Schwaikert, Bon Ami president, the license agreement will return an expected 17 cents a share to Bon Ami stockholders. He said sales of "Easy-Off" are expected to increase substantially. Bon Ami's own product "Jet-Spray" has been on the market since 1956, and Mr. Schwaikert reported that its sales have increased 43% since 1958. He announced that the product now contains a dimethyl polysiloxane silicone to eliminate streaking, impart a high lustre, and speed up application time.

•

Pyrethrum Surplus Expected

Pyrethrum production in Kenya may have a surplus of about 500 tons in excess of expected sales at the end of financial year on June 30, N. H. Hardy, executive officer of the Kenya Pyrethrum Board, reported before he left on a three-month sales promotion tour of the European and U. S. markets. Mr. Hardy said that although sales in the last financial year might show an increase of about 40% over the previous years (9,200 tons against 6,500 tons), it was unlikely that all the production would be sold. Flower production in the fiscal year beginning July 1 is expected to be close to 14,000 tons, with a potential sales value of $14 million.

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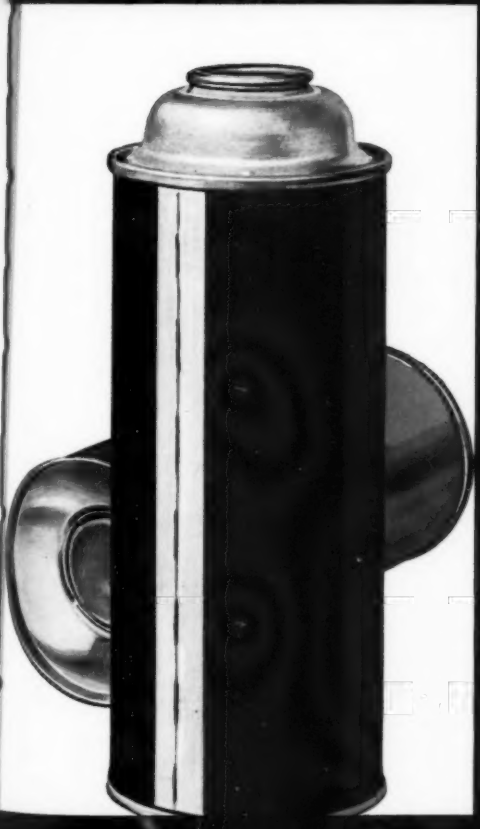

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Continental was first in 1947 with low pressure aerosols, and is still leading the field in design ingenuity and production capability. If you're looking to increase your sales through the use of aerosol cans, call Continental. Our Technical Center in Chicago, staffed by top-flight engineers and researchers, will work with you to develop the aerosol can that's right for your product. Added service like this is why—Whatever you package, whatever you produce, Continental has the right container for you.

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Aerosol perfumes and colognes

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Breck Survey Shows Large Market for Hair Care Products

FOUR out of five American women have one or more hair problems that may be controlled or corrected by hair care preparations. This finding by the 14th Annual Breck Survey, just completed by John H. Breck, Inc., Springfield, Mass. is believed to indicate that there is a vast potential market for such hair care preparations among U. S. women.

The survey is conducted among 4000 subscribers to an un-named major women's magazine, and is based on replies from 2936 women, a return of 73.4%. These women reported that the problem with highest incidence—39% of the women surveyed—was dandruff. Lack of hair manageability, an important consideration in aerosol hair spray use, was specified by 32% of the women.

As was expected, the younger women (those under 35) reported the greatest number of hair problems—90% listing one or more undesirable hair conditions. This age category also had the highest incidence of dandruff (53%) and oiliness (20%). Older women, or those 55 and over, had 10% fewer hair problems than younger women, but lack of manageability was mentioned by 37% of this age group.

The Breck Survey showed that lack of manageability and dryness increase as women grow older, and in general, dandruff and oily hair decrease with age. Much of the survey was devoted to questions aimed at ascertaining the opinion of women about beauty salons.

Retail purchases of hair care preparations in beauty salons were made by only 12% of the women. Hair spray was the leading item bought, with 41% of the women making this type of purchase, a 26% increase over the last survey, when hair spray purchases were made by 34% of the women who bought merchandise for home use.

Schrader Expands Aerosol Group

Appointment of Steele J. Elmi as chief aerosol chemist, and of Frank J. Brusky and Harold P. Hecken as special representatives for aerosol sales, has been announced by A. Schrader's Son, Division of Scovill Manufacturing Co., Brooklyn, N. Y. Mr. Brusky will handle aerosol valve sales in the eastern states, and Mr. Hecken will represent the Aerosol Division in the Midwest. The staff additions are part of Schrader's program to broaden and intensify its services to the pressure-packaging industry.

Mr. Elmi is responsible for coordination of all pre-production testing of valves and customer formulations and testing of end-product shelf life. He has an extensive background in the aerosol field. Before joining Schrader he was a technical representative on aerosol propellants for the General Chemical Division of Allied Chemical Corp. Later he was technical director of Powr-Pak, Inc., and B. T. Babbitt, Inc., and more recently was aerosol chemist at Nestle-LeMur Co. A native New Yorker, he was educated in Brooklyn schools and holds a bachelor's degree in chemistry from St. John's University.

Mr. Brusky has had long experience in the aerosol industry. For eight years prior to joining Schrader he had been in customer sales and service with Precision Valve Corp. and earlier had been a sales representative for Atlantic Air Freight. He was educated in Hartford, Conn., schools.

Elmi Brusky Hecken

Mr. Hecken has been with Schrader in a number of technical and sales positions for 11 years. For the past six years, he has been the company's industrial sales representative in the Midwest. He was graduated from Cornell University with a bachelor's degree in mechanical engineering and served in the Korean conflict as a company commander in the U. S. Eighth Army.

•

Johnson's Connolly Is Dead

William N. Connolly, public relations vice-president of S. C. Johnson & Son, Inc., Racine, Wis., died July 9th after an abdominal operation. He was 62 years old, and had headed advertising for the company from 1929 to 1952.

Mr. Connolly is credited for a large part of the company's national television and radio advertising. Under his direction the company sponsored the "Fibber McGee and Molly" radio show, the Robert Montgomery television dramatic series, and several others. A veteran of World War I, he attended Colgate, Princeton, and Columbia Universities. He was a former board chairman of the Association of National Advertisers and was a director of Racine Hydraulics and Machinery, Inc.

•

Bishop Sues TV Network

Hazel Bishop, Inc., cosmetic marketer based in New York, has filed a $9 million damage suit against American Broadcasting Co. Television Network, charging "discrimination" in pricing and tie-in contracts affecting sponsorship of the network's programs. Hazel Bishop specifically charges that it was unable to purchase television shows of similar grade and quality as its competitors, contending that favored purchasers were offered the shows at substantially less.

•

Foreign Equipment Agent

Eastway Corp., 6-8 Pasar Pisang, Termopolis 804, Djakarta, Indonesia is reported by the *Foreign Commerce Weekly* to be seeking equipment for filling and crimping aerosol containers. The wholesaler-importer requests that interested firms supply descriptive material and prices.

•

de Hoyos Heads Synfleur

Luis de Hoyos, vice president of Synfleur Scientific Laboratories, Inc., Monticello, N. Y., has been elected president of the company. He is a grandson of the company's founder, Dr. Alois von Isakovics.

ConCan Consolidates in N. Y.

Continental Can Co. will consolidate its head office staff and all of its other New York City offices in a new building at 633 Third Avenue in late August and early September of this year. Several of the company's division offices from outside New York will also relocate in 15 floors of the 41-story building between 40th and 41st Streets in New York. The organization's telephone number will be 551-7000.

The Metal Operations Group will transfer its headquarters to the new building, as will the Eastern Metal Division, its New York district sales office, and Metal Specialties and Decoware. Moving over with the Robert Gair Paper Products Group staff are the headquarters of the Paperboard and Kraft Paper Division, Bondware Division, Folding Carton and Drum Division, and Corrugated Container Division. The Glass and Plastics Operations Group executives and Flexible Packaging Division headquarters will also locate in the new offices. New York district sales offices will be maintained there for the Flexible Packaging Division, White Cap and Bond Crown Division, Hazel-Atlas Glass Division, and Plastic Bottle and Tube Division. Foreign operations, handled by the Overseas Division, will also function from the new location.

The new building reportedly will be equipped for the greatest possible efficiency in serving the company's customers and will afford the most modern facilities and conveniences.

•

Gen. Chem. Moves Laboratory

The "Genetron" technical service laboratory of General Chemical Division of Allied Chemical Corp., under the direction of Lloyd Flanner, has been moved from Edgewater, N. J. to the company's Morristown Research Center at P. O. Box 405, Morristown, N. J. Phone number of the laboratory will be JEfferson 8-8000. It will occupy newly-equipped quarters at Morristown.

New Antara Post for Brunson

William C. Brunson has been named Midwest regional sales manager for Antara Chemicals Division of General Aniline & Film Corp., New York, succeeding G. A. Brost, who was appointed to the position of product manager - intermediates in June. Mr. Brunson will be responsible for the sales of all Antara's chemical products including all surfactants, chemicals, UVINUL ultraviolet light absorbers, high-pressure acetylene chemicals, intermediates, heavy chemicals, drilling additives and other specialty chemicals in the Midwest area of the U. S., extending from North Dakota to Texas.

He joined Antara in 1956 and has served as sales engineer in the Atlanta, Georgia and Northern New Jersey areas. A graduate of the University of North Carolina at Chapel Hill, with a B.A. degree, he came to the division from the Hospitals Savings Association, Chapel Hill, where he had been field director. He is a member of the Salesmen's Association of the American Chemical Industry.

•

Wheaton Unveils Book

A press luncheon for the presentation of "The Wheaton Story", a new book describing the company was given by Frank H. Wheaton, Jr., president of the Wheaton Industries on June 29th in Trader Vic's Restaurant, New York. The press heard Mr. Wheaton's remarks about the book, which was written to explain the development and growth of nine diversified Wheaton Companies and 13 affiliated companies throughout the world. The theme of the luncheon was "Wheaton World Wide" and the menu featured an international fare. Representatives of the trade press, New York newspapers and business magazine editors, together with the Wheaton executives from all the companies, attended.

•

Penick Appoints Collins

S. B. Penick & Co., New York, has announced that Richard M. Collins has been appointed sales representative for the metropolitan New York, Bronx and Westchester County areas. He was formerly a sales correspondent with Penick, having joined the company in 1950. He holds a bachelor's degree in business administration from Pace College.

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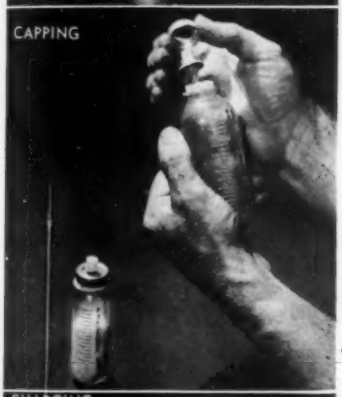

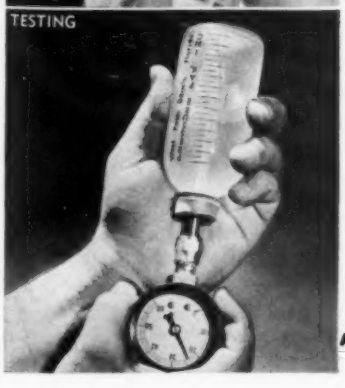

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SUITABLE FOR NITROGEN OR FLUOROCARBON PROPELLANTS

★ REUSABLE BOTTLES & COUPLINGS

4 SIMPLE STEPS:
1) Fill Ingredients.
2) Lock valve in place.
3) Charge with propellant.
4) Check Pressure, & spray!

COMPONENT PARTS AND COST!

6 SETS, INCLUDE:
- 6 - 4-oz. graduated plastic coated glass bottles.
- 6 - Valve Couplings.
- 20 - Valves, Assorted.
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Price $18.00. FOB W.P.B., Fla.

PROPELLANTS:

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6 - 12 oz. Propellant 12 ..... $17.50
6 - 12 oz. Propellant 114 ..... $17.50
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UNIVERSAL PRESSURE TESTER $16.00
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IS IT SAVING OR COSTING YOU MONEY?

There's more to distribution costs than the price tag on a shipping service. Quite often, the cheapest way is the most expensive in the long run. Look at your whole marketing and distribution set-up. Then consider how KLM can help you in overseas shipping. ■ KLM speed enables your sales manager to make good on short-notice demands; lets him compete in foreign markets through faster delivery. Your production manager, too, can save valuable time on tight production schedules. ■ That's not all. With KLM air cargo you don't have to tie up money in large inventory stocks. You can replace orders fast. Avoid the costly risk of obsolescence. And the shipping time saved means less interest paid on financing charges. ■ Then there's the satisfaction of knowing your shipment is in experienced, able hands. KLM Cargo Representatives at 114 cities in 80 countries are men of decision. They accept full responsibility, get your shipment to the right place at the right time, at the lowest possible cost. ■ So—study every piece in your distribution pattern, and decide for yourself. KLM Royal Dutch Airlines, 609 Fifth Avenue, New York 17, New York.

THE WORLD OVER
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ROYAL DUTCH AIRLINES

Planning Necessary in Packaging

In packaging, the race "does not necessarily go to the swift but rather to the thoughtful planner who has carefully evaluated his course and program before the starting gun sounded," Fred T. Pickerell, packaging director of Rexall Drug Co., Los Angeles, and head of the Aerosol Committee of the Packaging Institute, told a panel session on packaging held by the American Marketing Association in Los Angeles in June. Mr. Pickerell urged that the packaging developer be included in the earliest considerations of a new product or new market, pointing out that "all too often" he is invited into the discussion long after all other plans have been completed.

Mr. Pickerell declared that this approach is vitally important because "packaging is every bit as important to the success of the product as advertising, and it can mean as much of an investment." He suggested that for this reason the packaging expert should be brought in even earlier than the advertising man. "I have seen the suggestions of the packaging man result in a complete change of merchandising plans. I have seen good packaging open up entirely new markets."

He urged that packaging be left in the hands of a man or a section in your own organization devoted to the success of the company's packaging, suggesting that administration of packaging operation is important enough to be a full-time job.

•

French Form Packaging Group

A group of U. S. and French packaging specialists has organized, under the auspices of the French Packaging Institute, to form Package Research and Development International, which is described as the first packaging consulting organization in Europe. Headquartered at 67 Boulevard de Clichy, Paris 9, France, the organization is reported to be staffed with professional packaging engineers and technicians "fully trained in the latest U. S. and European packaging techniques."

PRDI is headed by Pierre J. Louis and Emanuel Nadler, who report that the purpose of the organization is "to provide management with rational and scientific means of solving and evaluating problems of product protection and appearance. These problems are viewed with emphasis on production, marketing, costs, human reaction, sales, advertising, etc."

•

DCAT Becomes Independent

The Drug, Chemical and Allied Trades Association, formerly a section of the New York Board of Trade, has become an independent organization. Formerly the DCAT "Section" of the Board of Trade, the group will now be known as "Association". DCAT has a roster of some 800 member firms in 39 states, Mexico and Canada.

•

Kintner Named NARD Counsel

Earl W. Kintner, former chairman of the Federal Trade Commission, has been appointed counsel for the National Association of Retail Druggists in charge of antitrust matters.

Plasti-Kote Sees Rise in Sales

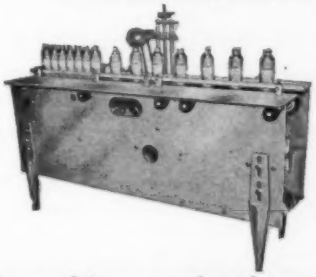
A sales rise to $7,500,000 this year as compared with $5,000,000 in 1960 and $3,000,000 in 1959 has been predicted by Elias Shapiro, executive vice-president of Plasti-Kote, Inc., Cleveland aerosol paint manufacturer.

Mr. Shapiro credits this to an increased interest in aerosol spray paint, reporting that 17% of the American people know about the availability of spray paint today, contrasted with 10% a year ago. "We have only scratched the surface," he added, further estimating sales will rise more than 100% in the next five years. Plasti-Kote sales increased 40% from 1959 to 1960, while national sales in the aerosol paint industry went up 25%, industry figures show.

Plasti-Kote, Inc., plans to move into a new 105,000 square foot plant in Medina, Ohio, late this summer. The new plant, which will have a 20 million aerosol paint can capacity, will reportedly be the most modern of its kind in the world.

KIWI®

AEROSOL CODE DATING EQUIPMENT
that has *earned* industry acceptance



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With work table area.

For automatic code dating of concave bottoms of aerosol cans.

Will mark top, bottom, or both at the same time.

No change parts needed

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NEW KIWI® AUTOMATIC CODE DATER
Mounts on Conveyor Line or Case Sealer

Uses ink reservoir system. One internal inking with poly squeeze bottle lasts from two to four weeks, or 25,000 to 150,000 impressions, depending upon the amount of printing required.

Average cost of ink for one code dater for one year is about $3.00

KIWI® sponge inkers last one to three years and can be repadded at very low cost.

Right or left hand mounting.

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SILICONE NEWS from Dow Corning

It's all in a spray's work

Spray-on starch ends the fuss and work of old hard-to-make household starch. Now add a small amount of a Dow Corning silicone emulsion and ironing itself becomes easier because the silicones condition the iron's sole plate. The iron glides smoothly and easily; starch won't burn and stick to the plate.

Everyone benefits — formulator, filler and housewife — when Dow Corning Silicones are used to make aerosol products perform better. For the latest, most complete technical information about silicones in specialties, cosmetics, polishes or industrial products, contact Dow Corning.

Aerosol products perform better, satisfy longer when formulated with silicones

A woman's day — from household chores to beauty care — is more productive and pleasant because of aerosols with their fast, convenient, no-mess application. To assure such performance and satisfaction, many aerosol packagers now include Dow Corning Silicones in their formulations. Result: boosted brand preference.

Furniture polishes, for example, offer no-rub application. They spread better; give faster film formation. A deeper, richer gloss is more easily attained and maintained. Resistance to oxidation and water spotting is "built-in" with Dow Corning Silicones.

Cosmetic sprays formulated with silicones stay put; won't wash away. The skin is never left greasy; remains free to "breathe"; is effectively protected against water-borne irritants. Hair sprays with silicones impart a softness and luster that lasts; resist the effects of humidity; improve manageability.

For specific formulation data or recommendations, write Dow Corning Corporation, Dept. 0220, Midland, Michigan.

first in silicones

Dow Corning

equipment processes bulletins

Develop New Can Coating

An aerosol development which provides an internal can coating system described as "far superior" to those used in other fabricated aerosol cans, has just been announced by Crown Cork & Seal Co., Philadelphia. Called the Crown "Spra-Clad" 16-ounce aerosol can, the new unit has an internal coating system similar to that of Crown's "Spra-tainer." However, in addition to coating in the flat prior to fabrication, the new unit is coated internally *after* the body has been formed in the round. This new method is reported to eliminate interior coating scratches which could occur in the can body fabricating process.

Seth R. Schneible, the company's marketing manager for aerosol products, reports that "Current emphasis on hard-to-hold products such as shave creams, starches, and window cleaners has created the need for an effective internal coating system. The 'Spra-Clad' can with outside tab construction provides an internal coating system for fabricated aerosols far more effective than any others so far devised."

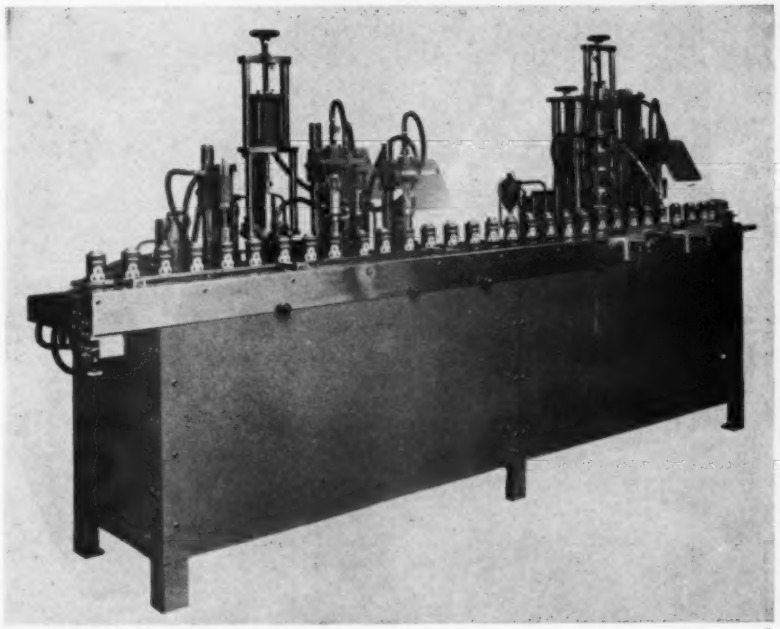
Crown reported that it has tooled and equipped new lines to handle large volume orders for the new can. The cans are available with various interior coatings designed for compatibility with the product to be dispensed.

•

Offers New Bottom Coder

Adolph Gottscho, Inc., Hillside 5, N. J., has announced a new coder for coding the bottoms of large containers. Called the "Sideline Markocoder No. 3", the conveyor attachment is intended for cans, bottles, and other cylindrical containers as tall as 10 inches and with diameters to 5 inches. It is said to work equally well on flush or recessed, flat, stacker, or concave bottom surfaces, and is especially suitable for the extra tall 16-ounce aerosol can now being marketed. Operating at speeds of up to 150 per minute, it features a quick method of changing type, and uses inks of various colors.

Aeratom Unveils New Production Unit at Chemical Fair

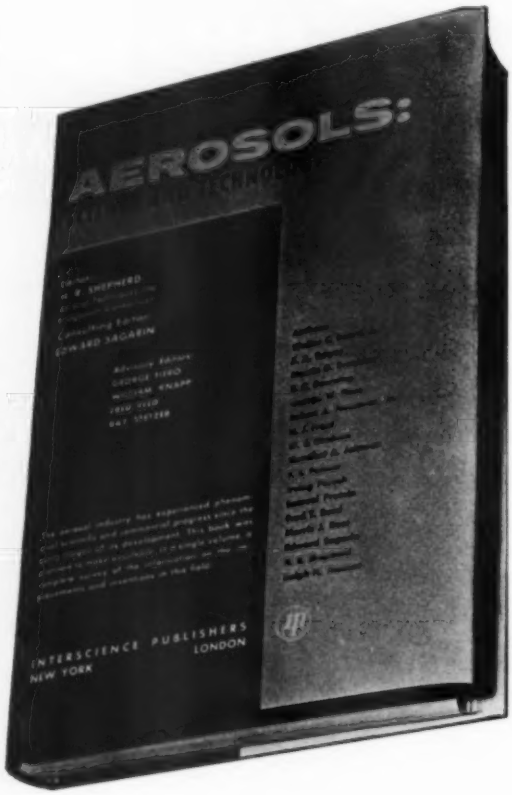


The "Aeratom 240 AUT," an automatic in-line aerosol production line, was demonstrated at the ACHEMA Fair in Frankfurt, Germany, recently by Aeratom, Ltd., Rapperswil, Switzerland, a leading European manufacturer of aerosol filling equipment. The capacity of the line is 10,000 units a day, and this can be increased by installing double or quadruple conveyor belts.

Aeratom reports that the new unit can be connected with the "Aeratom 390" automatic unscrambler and the "Aeratom 360" automatic water test bath to give high-speed production. Also shown at the show were the company's valve crimper and propellant charger and its propellant pump. Because of space limitations the company's "Aeratom 800 and 810" production units, both of which operate on the "Third System" were not shown.

At the ACHEMA Fair, Aeratom also unveiled its "Aeratom 010" automatic filling machine for collapsible tubes, a unit that operates at 10,000 to 12,000 a day.

Now is the time to order <u>your</u> copy of this technical book entirely devoted to Aerosols:



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* * * * * * *

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Develop New Filler Timer

A worm timer on a floating mounting is a new development announced by the Karl Kiefer Machine Co., Cincinnati, for its "Vari-Visco Filler," a high-speed production unit capable of filling more than 300 containers per minute.

Other features recently added to the filler are a through conveyor, large diameter feed and discharge wheels to provide smoother container handling, and elevating stainless steel trays to give "bottom-up" filling. The unit's center column drive is equipped with a safety detent operating a limit switch in the motor circuit which also makes for easy adaptation to synchronized drive arrangements.

The worm timer has a biased spring engagement with containers so that a jammed or tipped container will merely move the worm outwardly without damage. This action opens a limit switch and stops the machine, as does any jam in the feed wheel or discharge wheel.

Except in explosion proof applications a magnetic clutch in the pump drive permits operation of the machine without driving the pumps, thus permitting setting up or making adjustments. A two-speed transmission in the drive to the center column controls containers per minute independently of pump speed, and a variable speed drive controls the pumps and center column together so that when volume delivered is once established, it is not altered by a change in container speed. A separate control wheel provides a variation in the volume delivered while running.

Special gear available with the machine includes safety telescoping trays for filling restricted neck containers; vibration of trays during filling; stainless steel piping from pumps to head; and a number of other features.

•

N-Butyl Alcohol Bulletin

A revised and greatly expanded data bulletin on n-butyl alcohol has just been released by U.S. Industrial Chemicals Co., Division of National Distillers and Chemical Corp.

This 12-page bulletin contains U.S.I. specifications for n-butyl alcohol in addition to resin solubilities and chemical references. A large section on physical properties is included, as well as an extensive list of binary and ternary azeotropes.

The new bulletin is designed to provide information on n-butyl alcohol for the surface coatings and chemical processing industries. Copies are available from Technical Literature Department, U.S. Industrial Chemicals Co., 99 Park Ave., New York 17, N. Y.

•

Dryer for Aerosol Cans

A machine for drying aerosol cans after they emerge fom the hot water bath has been developed by Automation Design & Machinery Co., 1672 East 233rd Street, New York 66, N. Y. From the hot water tank the cans enter the drier on a 20-inch-diameter turntable, on which they are automatically gripped and held in individual nests on a conveyor chain. Each can is turned upside down to clear water from the valve mounting cup and the crown, they are dried by a blast of air, and then are turned right-side up and proceed off the unit on the conveyor.

•

Plasti-Kote Offers Catalog

A full color catalog outlining all the features of a new fast drying aerosol spray paint has just been published by Plasti-Kote, Inc., Cleveland, a leading aerosol paint manufacturer. The new fully illustrated catalog introduces what is called the "World's Finest Spray Paint," Plasti-Kote's new Target line. It gives detailed information on all the features of the new spray paint, including description of the Accu-Sprayhead, PCWA Rust Inhibitor, Fast-Fast dry operation, and tamper-proof cap.

The new promotion piece also lists details about color selections, assortments and the new Twirl-Wind counter and floor merchandising displays.

Further information and a copy of the new catalog is available by writing Dept. MS, Plasti-Kote, Inc., 9801 Harvard Avenue, Cleveland, Ohio.

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Molded Dip Tube Announced by V.C.A.

A new molded dip tube which is a homogeneous part of the valve has been announced by V.C.A., Inc., Bridgeport. The dip tubes are said to be fabricated to a tolerance of plus or minus .005, whereas normal dip tubing is supplied at plus or minus 1/16th of an inch.

The tubing is designed to evacuate all possible product from smaller glass or metal containers, without sealing off the bottom because of the cross notch. Further information and prices are available from the company at 1720 Fairfield Ave., Bridgeport.

•

Clutch Attachment for Filler

A clutch attachment now offered by the National Instrument Co., Baltimore, adapts any of its "Filamatic" portable fillers for automatic conveyor line operation. The attachment must be factory installed and is available in maintained or momentary contact types. With the former, the Filamatic will dispense a single, preset volume of liquid each time an actuator switch is momentarily depressed. With the maintained contact type, the liquid is dispensed either with *momentary* or *maintained* closure of the actuator switch. A typical example of the latter is the automatic filling of a perfume and propellant into aerosol spray bottles, as shown on the above illustration of an installation at Armstrong Laboratories of Boston, Mass. The bottles are transported to the filling nozzles on an intermittent motion conveyor. At the filling station, the bottles depress a microswitch, which actuates an air cylinder to lower the nozzles into the bottles. At this point, another microswitch is actuated which cycles the "Filamatic" filler and dispenses a single-preset volume of the perfume-propellant mixture.

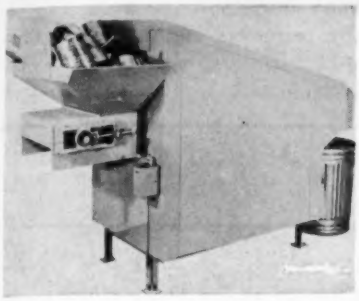
•

Reed Unveils Cotton Product

A new aerosol product to detect the presence of micro-biological damage in cotton fibers has been unveiled by Dr. Winston H. Reed, president of General Aerosols, Inc., Shelton, Conn., at the July 18-19 conference of the Institute of Textile Technologists Conference of cotton graders, buyers and technologists. The meeting was held in Charlottesville, Va., on July 18 and 19.

Called "Cavitomic Cotton Test Spray," the product is reported to greatly simplify the process for grading bale cotton. It was developed by Dr. Reed and Donald S. Buell, both of General Aerosols, in collaboration with Dr. Jack Compton of the Institute of Textile Technologists, Charlottesville.

Can and Bottle Crusher



A can and bottle crusher that will reportedly "crush any size bottle, can, vial, or aerosol can" has been developed by Rescor Industries, Mount Vernon, N. Y. The unit is designed to crush cans so that the product may be recaptured for re-use. The manufacturer claims it can be used for short-fills, leakers, returns, damaged goods, etc.

•

Offer Dri-Die Data

Technical information on several dust base forms of specially conditioned "Dri-Die" (W. R. Grace and Co.'s trademarked insecticidal silica aerogel) in combination with Pyrenone, Fairfield Chemical's base insecticide containing piperonyl butoxide and pyrethrins, has been issued for formulators and manufacturers by Fairfield Chemicals, Food Machinery and Chemical Corporation, New York City. Dri-Die alone or in specially conditioned forms is newly available from Fairfield Chemicals as part of its recently reactivated Powco brand line of specialty base products for non-agricultural use.

Fairfield's new nine-page technical bulletin discusses Dri-Die, Dri-Die and Pyrenone, and other combinations of Dri-Die. Preparation of Pyrenone/Dri-Die roach and ant powder, Pyrenone/Dri-Die pet powder, and Sevin*/Dri-Die pet powder by a mixture of special Powco dust bases is described. Specimen label data is given for each of these applications. In addition, the characteristics of Dri-Die are described in detail, with sample label information given for Dri-Die as primary base for a general insecticide, or as flea powder for dogs and cats.

Also discussed is a convenient and effective method of applying Pyrenone/Dri-Die combinations with pressurized sprays, and a typical formulation resulting from extensive studies is given for such a spray. Technical data and price lists on Powco brand dust bases containing Dri-Die are available from the company's sales headquarters, 441 Lexington Ave., New York.

•

Plasti-Kote Sale Displays

Two new point-of-sale displays have just been introduced by Plasti-Kote, Inc., Cleveland, O., to help dealers merchandise the company's new fast drying spray paint "Target" line.

The new merchandising "Twirl-Wind" displays feature a ferris wheel movement which is believed by Plasti-Kote to be the first motion display of its kind designed for impulse selling in the aerosol paint field.

The Plasti-Kote "Twirl-Wind" counter display features a 72 can assortment. The display is 19" wide, 21" deep, 34" high and weighs 7 lbs. The floor display has a 144 can assortment and is 19" wide, 27" deep, 62" high and weighs 15 lbs.

Further information on the new displays is available from Dept. MS, Plasti-Kote, Inc., 9801 Harvard Avenue, Cleveland, Ohio.

•

Mary Chase Names Sales Mgr.

Lola C. Christie has been named sales manager of the Marie Earle Corp., a subsidiary of Mary Chess, Inc., New York. She had been assistant sales manager of the company.

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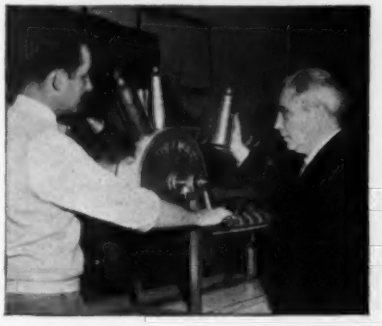

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FTC Cites Chemway Pricing

Chemway Corp., Wayne, N. J. has been ordered by the Federal Trade Commission to stop discriminating in prices charged competing customers for its "Lady Esther" cosmetic products. FTC Hearing Examiner Edward Creel charged that Chemway offered some retailers one-third off suggested minimum retail prices plus 16⅔% from the remaining price. Competing retailers, he said, were offered only a straight 40% discount. Chemway offered evidence that differences in costs between shipments to direct buyers (with centrally-located warehouses) and buyers who require drop shipments justified the price difference, but Mr. Creel rejected this evidence as "deficient."

•

Fleuroma Promotes Warner

David J. Warner has been named to the position of field sales manager of Fleuroma, Inc., Long Island City, N. Y., supplier of essential oils and aromatic chemicals. With Fleuroma for seven years, Mr. Warner will work with A. E. Eisenkraft, sales manager, in handling the company's expanding sales efforts. He is a past president of the CIBS (Cosmetic Industry Buyers Society).

•

Midwest Salesmen Elect Slate

The Midwest Industrial Chemical Salesmen's Association has elected the following slate of officers to serve one-year terms beginning June 1: president, Edward F. Lasek (Tennessee Products and Chemical Corp.); vice president, Paul Brna (George Lueders & Co.); secretary, Raymond E. Champlin (Meer Corp.), and treasurer, Robert W. Meidell (Charles Pfizer & Co.).

•

Flam-Haft Moves Offices

Flam-Haft Laboratories, Inc., New York, fragrances, flavors and industrial odorant supplier, last month moved to a new location at 832 Broadway, New York 3, N. Y. The new facilities include the offices, plant and enlarged space for the firm's creative perfumery and flavor specialties departments. Phone number is ALgonquin 4-0118.

Aerosol Powders

(*From Page* 27)

C = 2.2% of (A+B+C) =
= .022 x 4.06 =
0. 09 cubic foot

A = 92% of (A+B+C) =
= .92 x 4.06 =
3.74 cubic feet

5. Convert to a weight basis from the respective densities:

A = 87.65 pounds per cubic foot for propellant

B = 53.40 pounds per cubic foot for inert liquid

C = 59.30 pounds per cubic foot for surfactant

therefore:

A = 327.5 pounds
B = 12.5 pounds
C = 5.5 pounds

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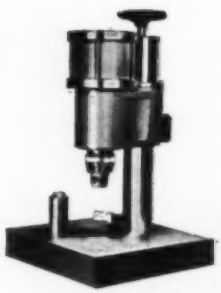
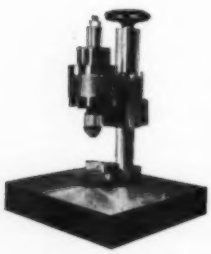
1. Laboratory Clincher DP-104 Inter-changeable Tools for Metal Cans and Glass Bottles.

2. Laboratory and Small-Run Pressure Loader DP-110

3. Propellant Pump WM-DP 385 Fully automatic, compressed air operated. Empties cylinders, mixes propellants, guarantees liquefaction.



4. Valve Clincher WM-DP 350 Semi-automatic, compressed air operated. Capacity: 28-30 per min.



5. Nitrogen Gasser WMP-DP 390 Semi-automatic, compressed air operated. Capacity: 28-30 per min.

Catalogues and Prices on Request

Manufacturer:
Johann Waldherr O.H.G.
Kafertaler Strasse 162
Mannheim, Germany

Sales Representative:

druk pak, inc.
Limmatquai/
Rossligassi 8
Zurich 1
Switzerland

The components can then be calculated on a total formulaton basis as follows:

Powder Formulation

Material	Pounds	Per Cent Weight
Active Powder	100.0	22.1
Bulking Agent	7.7	1.7
Propellant	327.5	72.2
Inert Liquid	12.5	2.8
Surfactant	5.5	1.2
	453.2	100.0

Use of the relationships discussed above allows the formulator to incorporate a maximum amount of active powder. To incorporate amounts less than the maximum, excess bulking agent is added and the liquid volume adjusted accordingly (equation 7).

The following formulations are examples of powders that may be packaged in aerosol form.

Toothpowder

Material	Per Cent Weight	Supplier	Code
Dicalcium Phosphate Anhydrous	2.93	Victor Chemical Co.	Active Powder
Dicalcium Phosphate Dihydrate	26.34	Victor Chemical Co.	Active Powder
Santocel 54	1.54	Monsanto Chemical Co.	Bulking Agent
Klearol	2.43	Sonneborn Chemical and Refining Corp.	Inert Liquid (B)
Span 85	0.69	Atlas Powder Co.	Surfactant (C)
Tween 80	0.39	Atlas Powder Co.	Surfactant (C)
Propellant 12/11 50/50	65.68	Union Carbide Chemicals Co.	Propellant (A)
	100.00		

Insecticidal Powder

Material	Per Cent Weight	Supplier	Code
SEVIN (Technical Grade)	22.48	Agricultural Chem. Div., Union Carbide Chem. Co.	Active Powder
50 Microns			
Santocel 54	1.73	Monsanto Chem. Co.	Bulking Agent
Blandol	5.65	Sonneborn Chem. and Refining Corp.	Inert Liquid (B)
Span 85	1.34	Atlas Powder Co.	Surfactant (C)
Propellant 12/11 50.50	68.80	Union Carbide Chem. Co.	Porpellant (A)
	100.0		

Catamenial Napkin Powder

Material	Per Cent Weight	Supplier	Code
Italian Talc	29.37	Hammill & Gillespie, Inc.	Active Powder
Santocel 54	1.20	Monsanto Chemical Co.	Bulking Agent
Hexachlorophene	0.20	Sindar Corp.	Bulking Agent
R-45 Oil	2.40	Sonneborn Chem. and Refining Corp.	Inert Liquid (B)
Span 85	0.70	Atlas Powder Co.	Surfactant (C)
Tween 80	0.39	Atlas Powder Co.	Surfactant (C)
Propellant 12/11 50/50	65.74	Union Carbide Chem. Co.	Propellant (A)
	100.00		

Foot Powder

Material	Per Cent Weight	Supplier	Code
Italian Talc	32.96	Hammill & Gillespie, Inc.	Active Powder
Santocel 54	0.69	Monsanto Chem. Co.	Bulking Agent
Zinc Stearate	0.66	Fisher Scientific Co.	Bulking Agent
Dichlorophene	0.26	Sindar Corp.	Bulking Agent
Klearol	2.33	Sonneborn Chem. and Refining Corp.	Inert Liquid (B)
Span 85	1.01	Atlas Powder Co.	Surfactant (C)
Propellant 12/11 50/50	62.09	Union Carbide Chem. Co.	Propellant (A)
	100.00		

Body Powder

Material	Per Cent Weight	Supplier	Code
Italian Talc	33.04	Hammill & Gillespie, Inc.	Active Powder
Santocel 54	1.01	Monsanto Chem. Co.	Bulking Agent
Hexachlorophene	0.26	Sindar Corp.	Bulking Agent
Carnation Oil	2.14	Sonneborn Chem. and Refining Corp.	Inert Liquid (B)
Span 85	0.86	Atlas Powder Co.	Surfactant (C)
Propellant 12/11 50/50	62.69	Union Carbide Chem. Co.	Propellant (A)
	100.00		

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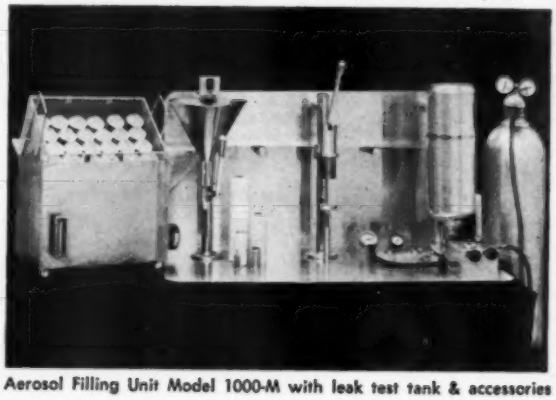
model 1000-m, including: gasser, filler, crimper, pressure tester, support rack and shelf $397.50
FOB West Palm Beach, Fla.



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Pressure Pak, inc.

420 Monceaux Road **West Palm Beach, Fla.**

Ralph Hart Joins Heublein

Ralph A. Hart, who resigned as executive vice-president of Colgate-Palmolive Co. earlier this year, has been appointed president of Heublein, Inc., New York, producer and importer of liquor and foods. He succeeds John G. Martin, president since 1937, who continues as chief executive officer. Mr. Hart had also been president of Colgate International.

Spray Patterns

(*From Page* 22)

excessive inhalation of spray particles. In addition, over-spraying, i.e., spraying over an area larger than intended, could lead to damage of furniture, clothes and the like.

All these formulations suffer from the fault that they incorporate not only large amounts of expensive ingredients, i.e., the propellants, but also that one of the propellants (No. 11) could give rise to corrosion. The formulation 65-70% hair lacquer,, 35-30% propellant 12 is therefore more suitable if considered from the angle of cost and corrosion, but totally unsuitable if used in conjunction with a standard valve having an ordinary actuator; because a strong narrow jet, consisting of large particles results (Figs. 2A, 2B), despite the fact that the spray does contain liquid propellants. If sprayed into a flame, a flame extension of 23 inches results and the drum tests are positive. If, on the other hand, a break-up spray actuator is employed, then a wide angled soft spray with much smaller particles results, (Figs. 3A, 3B) which is acceptable, and which has also a better flammability rating.

Variations in spray patterns are, however, obtained not only by changing from an ordinary actuator to a break-up spray actuator in any given proprietary valve, but also by using a different valve altogether. This is illustrated by comparing Figs. 4A and 5A, with 3A all spraying a mixture of 65% alcohol and 35% propellant 12.

The changes in spray pattern effected by changing the valves applies to every formulation, but is particularly noticeable when the valve design itself has a bearing on the resultant spray, as occurs with the formulations mentioned above, or when using butane or chlorofluorohydrocarbons with an aqueous product (three-phase systems), or when nitrogen is used as the propellant.

With nitrogen, as with the three-phase systems, there is no propellant at all in the emerging spray, which is very narrow and contains very coarse particles when used with an ordinary actuator. An efficient break-up actuator can, however, convert this jet into an acceptable spray.

Here too the difference between two valves by different manufacturers, is apparent (Figs. 6A and 7A, 6B and 7B). In addition, a comparison of Figs. 3A and 3B with 6A and 6B and 4A and 4B with 7A and 7B, indicates the difference between packs where the spray contains propellant, and where there is no propllant in the spray.

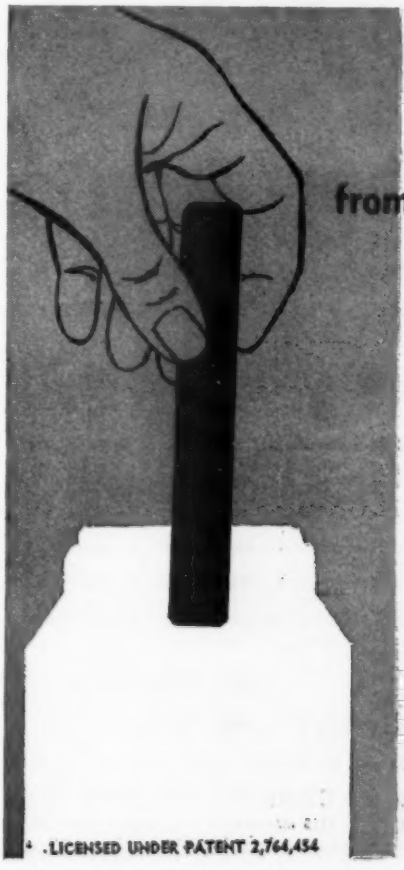
For Figs. 6A and 6B, 7A and 7B the formulation 66 per cent ethyl alcohol pressurized to 90 psig. with nitrogen, was utilized.

A comparison of Figs. 3B and 6B (also 4B and 7B) indicates that the spray particles tend to settle faster when there is no propellant in the spray.

Foams and Streams

Although foams and streams do not give rise to spray patterns, it is not inappropriate to deal with the problems involved.

For *foams*, standard valves with foam actuators are employed. These actuators are characterized by large internal expansion chambers which continue without interruption into the large external orifices. A product utilizing a foam actuator will yield a foam immediately after discharge from the external orifice. The nature of the foam is affected primarily by



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the type and amount of the propellant. The varying types of foam produced by the different propellants may, in part, be related to the vapor pressure of the propellants used in the formulation. Thus different propellants present in the same concentrations will yield different foams, those with higher pressures tending to give stiffer and more elastic foams than those with lower pressures. With any given propellant stiff, dry and elastic foams are produced at higher propellant concentration, whereas soft, somewhat wet and less resilient foams are produced at lower propellant concentrations.

Foams are assessed by determining the density, the overrun and possibly also by "feel."

Foam density may be determined by discharging into a vessel of known volume and tare, and weighing the amount contained therein. It is best to discharge an equal quantity to waste, prior to the actual determination to ensure that possible spout residues do not influence the result.

The *per cent of overrun* indicates the volume of foam that is produced and is defined as

$$\% \text{ overrun} = \frac{\text{volume of foam} - \text{volume of liquid} \times 100}{\text{volume of liquid}}$$

It depends primarily on the concentration of propellant, and the nature of the aqueous formulations.

It is worthwhile mentioning that a spray which gives a foam on impingement may be obtained when using a standard *spray actuator* rather than a foam actuator. This method of dispensing is often resorted to when using glass packs, as very few foam actuators are suitable for use with 20 mm., or thereabouts, valve closures.

For *streams* the special actuators developed principally for nitrogen packs must be employed and correct discharge is primarily a function of the product itself, once it has been established that the viscosity is not too high for discharge through the selected valve. Propellant pressure merely controls the proportion of the original fill that will ultimately be discharged, i.e., the amount of undischargeable product. Thus once the valve has been established, the product discharged will at all times be physically identical with the material originally sealed within the container. Metering valves are necessary in order to achieve drop-by-drop discharge.

In order to obtain a good product distribution, special actuators (nozzle elongators and so on) are resorted to more often with stream and drop dispensing, than with packs yielding space or surface sprays.

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Kathleen Cory Is Dead

Kathleen Spencer Cory, beauty editor of *Harper's Bazaar* and a veteran of the cosmetics industry, died June 7 in New York. She held her Harper's Bazaar post for seven years, and previous to that was associated with Coty, Inc.; Elizabeth Arden, and Peggy Sage, Inc.

Contraceptive Package

(*From Page* 24)

and which will facilitate the application of germicides to parts of the body to be treated by the germicide."

"One essential feature of the design," Mr. Indelicato points out, "is the end of the nozzle, which does not deliver the foam from the rounded *point* but rather from four ports cut into the sides. This permits the foam germicide to be delivered evenly in four directions, giving good protection. If a relatively thin and watery germicide were used in place of the foam, only a thin coating would be produced on the surface to be treated and it would provide poor protection or might rapidly lose its efficacy."

Mr. Indelicato is particularly "high" on the invention from the standpoint of cost. In commercial production, he estimates, the filled germicidal cartridge will cost the marketer about two and a half cents. The applicator, which consists of four different plastic parts, will cost about eight cents. Thus for a total cost of under a quarter, the marketer would be able to market a kit containing a dispenser and half a dozen cartridges. "It should be emphasized," Mr. Indelicato stresses, "that this figure describes only cost *to the marketer*. It is conceivable that advertising costs, retailing profits, etc., might bring the price up by two or three times. But what I think is important is that this device would offer a good, cheap contraceptive device for over-the-counter retailing in any drug store. For normal use, it is rugged, easily cleaned, and should be capable of years of use. Furthermore, it is conceivable that its ease of use would extend its use to a mass market now hesitant about using contraceptive devices because of costs or mechanical or physical inconvenience."

How does a retail pharmacist begin to go about developing an aerosol product?

As has been reported above, according to Mr. Indelicato, initial interest was generated by the aerosol products in his store, coupled with his avocation for inventing medical devices. He examined aerosol packages of various types, and then began working on sketches of possible devices which might use this principle. Referring to material from component suppliers, he evolved the basic design. Last fall, he enrolled in the course in Aerosol Technology given at St. John's University, and from that learned some of the principles he would need to work out a formulation.

He next took his idea to William Scheck, president of Builders Sheet Metal Works, Inc., New York, and together they worked out the crimp adapter for roll crimping the aluminum cartridges. Then he had a plastics company custom fabricate a single unit to his strict specifications, and used Fluid Chemical Co. to cold fill a number of cartridges.

Now his objective seems to be the next logical step: he is endeavoring to interest some major pharmaceutical marketer in using the device for a nationally marketed product. He would naturally prefer a "major drug house" which could give the dispenser a sales campaign to get over-the-counter distribution and sales throughout the country, and perhaps in other countries. "Such an inexpensive contraceptive device is badly needed," he points out. "All that is required is that news of it 'get through' to the right drug executives." He didn't say so, but he hopes his interview with *Aerosol Age* might turn the trick. ★

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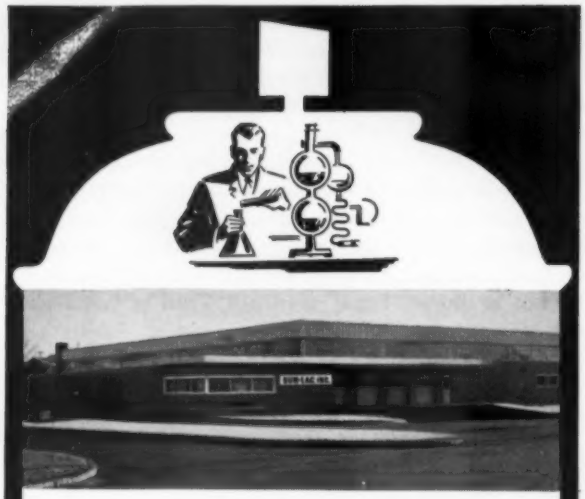

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the Martin Co., Baltimore manufacturer of missiles and electronic equipment, have agreed to a merger.

Communications

(*From Page 49*)

Help the new employee feel comfortable in his new surroundings. Be sure he is carefully indoctrinated in the company's goals and its "philosophy". Set standards of performance for him, let him know exactly what is expected of him, then check performance and let the employee know how he measures up.

To be truly productive, the new employee has to know that he is a constructive, participating member of the company team. This means: does he know what he is doing and why he is doing it. Let me cite the example of an employee who was reprimanded by his foreman for his haphazard work on a certain small, rubber valve. Many of these valves he worked on had been rejected. The employee was finally told that this particular valve was a component part of oxygen equipment used in military aircraft. When explained, his productivity increased and the rejects were reduced to less than 1%.

Had the employee recognized the importance of his job, at the beginning, time, material, and expense could have been saved.

A certain company I know employed slate splitters who worked in small teams in unheated and what amounted to poorly lighted shacks. After a time, management was able to build a modern, heated building. The facility included a conveyor belt that removed the split slate continuously, eliminating the need for the men to carry the slag out at the end of each day. In spite of the bettered conditions, production *dropped* drastically. As a last resort, the men were questioned and management found that there was no longer satisfaction in the job. Each man no longer could see the results of his day's work in terms of piles of split slate. Part of the "communications problem" for management is to check with its people *before* making major changes to determine if any serious effect on morale will occur as a result.

The continual feedback of information, and opinion from employees to management, is vitally important if management is going to conduct a sound, internal, communications program. Many companies, periodically, invest thousands of dollars in attitude surveys within their plant to determine whether their message is getting across.

I believe that we will all agree that we are not in business, primarily, to further the pursuit of happiness of our employees. But, we must realize that we can increase productivity, and efficiency, of our employees by building better rapport. Feedback, whether in the form of surveys, or merely informal guesses, will also give a good indication of whether or not the ideas are getting down to the employee. A recent survey conducted revealed that of eight executives in a major manufacturing company only three were able to explain exactly what was expected of them or their department by the company. Unfortunately, this situation prevails at every level of industry.

Communication, we know, covers not only what we say, but what we do and actions always speak louder than words.

Several years ago an experiment was conducted by psychologists in the offices of a large corporation to determine factors affecting the efficiency of the firm's employees. Under carefully controlled conditions lighting first was changed, arbitrarily. Production increased surprisingly. Temperature was then changed, from point to point. Again, production was increased. Finally, the entire office was restored to its original condition, and production again went up. The psychologists were stumped. They asked the employees if they had an answer. It developed that the em-

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ployees were so pleased to receive *so much* attention that their morale soared, and as it usually does, so did production.

We realize that this type of experiment is not always practical. However, it illustrates one of the usual forms of recognition.

Recognition can take many forms from simply a name sign on the desk to a reserved space in a parking lot.

Recently, the *Wall Street Journal* published an article reporting a survey it had conducted among industrial engineers. Many companies had been subject to a serious turnover rate among highly paid, highly skilled engineers, who were involved in what appeared to be important, and interesting work. However, these engineers expressed disatisfaction in their jobs. It was found, subsequently, that many merely felt they had not been recognized for their contributions. Some of course, had other complaints. But essentially, it was a question of recognition. The newspaper related how some of the companies involved had solved the problem by giving their engineers well furnished private offices. Others, secretaries. Still others were concerned about minor details. The reaction of one engineer was, "Production variances bothered me a lot less than the fact that I had no special parking space."

The delegation of authority, and responsibility, is also a method of communicating recognition to an employee. But management must realize that these two go together. When responsibility is delegated, authority must also be given to back up the employees' actions. The two will assure the employee that he has management's confidence not only to direct, but to make decisions.

Management must always remember that the employee is likely to assume that what management is doing is not for the benefit of the employee. Unfortunately, management is usually suspect, guilty, until proven innocent. For management to feed the fires of suspicion, by allowing rumors to start, and to run rampant without insisting that the workers know the truth, is to destroy confidence itself.

It's axiomatic that internal communications, to be effective, must be accurate, constructive, positive, and properly directed. But this two-way street can be blockaded or torn up by improper use, and too much traffic. The employer who fails to take into consideration the fact that his staff is probably just as busy as he is can abuse his side of the avenue, and do much to undermine it. To communicate too often can be just as serious a mistake as not to com-

Five Years Ago This Issue . . .

From way back in the dim reaches of the August, 1956 issue of *Aerosol Age* come these news items, many of which will be familiar to the "veterans" of the industry:

1. B. T. Babbitt, Inc. acquired Connecticut Chemical Research Corp., Bridgeport filler, and its subsidiary, Bostwick Laboratories, Inc. Connecticut Chemicals continued to operate as a separate unit of Babbitt, under the direction of its founder and president, A. O. Samuels.

2. Hunter Douglas Aluminum, a division of Bridgeport Brass, announced plans to introduce an aluminum aerosol container and appointed John H. Mills, aerosol veteran and former director of purchases at Bridgeport Brass, to head container sales.

3. Alpha Engineering & Machine Works, then a major manufacturer of aerosol filling equipment, appointed Ove Orwoll to be sales manager replacing Grant Hoyt.

4. An estimated 1½ million viewers saw a July 5th discussion and demonstration of aerosols on National Broadcasting Co.'s "Home Show" in July 5. John Frangos, then with General Chemical Division of Allied Chemical, narrated the demonstration.

5. Colgate-Palmolive appealed to the Supreme Court the Circuit Court of Appeals decision in the "Rise" shaving cream patent suit brought by Carter Products, Inc.

6. Precision Valve announced a plant expansion to bring its capacity up to 25 million valves a month.

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municate often enough. How often have you said to yourself, "If only someone would say something once and then give me time to do it, or if I could just get away from the telephone and my in-basket I could get something done."

Management must face the fact that when it calls a meeting of employees, or sends a memo, or posts a bulletin, it must have "something to say."

I recently talked with one of the top executives of a company who told me that he had just published a directive to all his staff to the effect that interoffice communications memos and notes should be reduced drastically. He said that this order came as a result of suddenly discovering how much time he had been investing in writing, and answering petty correspondence. A check of his own time, during a single working day, had revealed that out of an eight-hour day he had spent nearly two hours dictating memos to his employees. When he considered the additional time necessary to write, and distribute these odd bits of information, the time taken by his employees to read the material, and in some cases comply with it, and respond, the business had suffered an approximate 8% cut in total productive time.

This same company executive predicted that one day it would be necessary for his organization, and many others, to employ a superintendent or vice president in charge of communications to insure the clear, concise transmittal of information within the company.

In conclusion, I want to express the firm belief that our nation, and our industry, will continue to prosper. My confidence lies in the realization that the giant steps that have already been taken by the Chemical Specialties Manufacturers Association, for example, have resulted from looking ahead rather than back. I have pointed out what I believe is the challenge to management in the decade of the 60's: effective, internal communications directed toward the ultimate objectives of increased production, and a healthy economy.

In discussing this problem I have briefly covered some of the factors I feel to be of primary concern if management is to remain sensitive and responsive to its responsibilities. *The challenge is not a new one.* Ever

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All we've got to say
is on page 73

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since pre-historic man chiseled and splashed pictures on the wall of his cave, man has sought new ways to transmit his ideas to others. Modern machines for communications, notwithstanding, people must continue to strive for a better way to talk to each other, and to clarify their intentions. Good human relations dictate that this effort continue, or not only will industry suffer disastrously, but our entire world may collapse. We no longer seem to have time to insure that our thoughts and actions are completely understood by those with whom we conduct our affairs. Yet, the keystone to all human relations is communications, clear, thoughtful, and concise. What we say is important, but just as important is the way we say it.

If that father is ever to be able to get through to his teen-age son, if management is to effectively communicate with its employees, there must be a common ground on which to stand. In a plant I visited some time ago an alert management had posted a sign for all of its people to see. It read, "Good human relations begin with please and end with thanks." ★

•

CSMA Widwest Tournament

The Chemical Specialties Manufacturers Association will hold its Midwestern Golf Tournament on Tuesday, Sept. 19 at the Itasca Country Club, Itasca, Ill. The tournament is open to all CSMA members and one guest per CSMA member representative attending the outing.

Shave Creams

(*From Page* 42)

it is also likely that at times one variable might be interrelated with another. Such an interrelationship is graphically represented in Figure 3. Table XVIII shows the data which has been plotted. The property being measured is foam density and the variables under study are propellant concentration and propellant type. Figure 3 shows that a change in propellant concentration from 5 to 9% with the fluorinated hydrocarbon exerts a much larger differential effect than does liquefied petroleum gas. Such an interrelationship is statistically termed an interaction. By statistical analysis, interaction relationships between propellant type and propellant concentration can be estimated if it is assumed that this is likely to occur. The usual main effects are denoted by capital letters and the interaction terms are indicated by a combination of two capital letters. When the interaction term is significant, the main effects cannot be considered by themselves but must be viewed as the combination of both variables. Thus, in the previous example when considering propellant concentration, the type of propellant being used must also be considered. In this particular experiment it was suspected that propellant concentration was not independent of propellant type when considering different basic types of gases such as fluorinated hydrocarbons versus liquefied petroleum gases. Therefore, in this particular screening study there were a total of nine effects and one interaction that were evaluated for significance.

Conclusions and Summary

Charge viscosity or stability properties were not significantly affected by any of the variables in the experiment. Since pH and density showed little variation, these data were not analyzed. Table XXII indicates the direction of the effect that each of the variables has on the responses studied when the fluorinated hydrocarbon propellant systems were compared using the experimental runs shown in Table III above.

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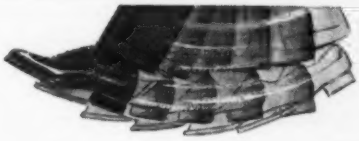

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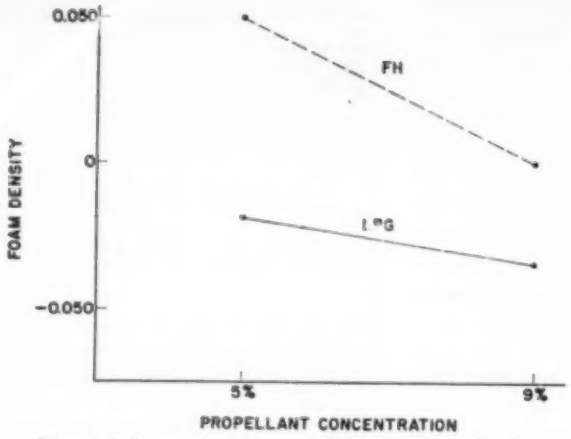

Figure 3—Interaction of two variables on foam density. FH—fluorinated hydrocarbon. LPG—liquefied petroleum gas.

in variable going from a low to high level created a significant positive effect, this change is noted by a plus (+) sign. If going from a low to high level created a decrease in the property, this is denoted by a minus (—) sign. Where no important effects were found, no notation is listed.

The results show that the number of shaves obtained from a can of shaving cream was increased either by increasing soap concentration or by changing to a fluorinated hydrocarbon of a type which provided increased pressure. The number of available shaves was reduced by using a high proportion of stearic acid in the blended fatty acid. Using a high free fatty acid concentration or a high polyol level also decreased the number of shaves per can.

The residue of shaving cream remaining in the can after dispensation was decreased by increasing polyol concentration and increasing propellant concentration.

Foam density was decreased by using higher propellant concentrations.

Foam strength was increased by using higher soap concentrations, high levels of stearic acid in the blended fatty acid, high polyol concentration, or high propellant levels.

Drying time was shortened by increasing the free fatty acid or propellant concentration. Increasing the polyol concentration increased the drying time.

Changing the levels of the variables had no effect on the difference in bubble size as dispensed and after ten minutes air exposure.

The one variable of the experiment which did not show any real effect on any of the properties was the interchange of 70% sorbitol solution and glycerin.

Tables XVI to XXI compare the effect of a fluorinated hydrocarbon blend with a liquefied petroleum gas. In Tables XVI, XVIII, and XIX, where the interaction YZ

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is significant, general interpretations of the four levels is indicated below the tables.

Considering the number of shaves per can, the effect of propellant concentration was much more pronounced with liquefied petroleum gas. Also for the same weight concentration, the liquefied petroleum gas gave more shaves per can than the fluorinated hydrocarbon blend.

Analysis of the data on the amount of shaving cream remaining in the can after dispensation showed that there was no effect of propellant type or concentration.

Increasing propellant concentration decreased foam density. Use of fluorinated hydrocarbons resulted in higher densities. After a one month storage period, the

(*Continued on Page 86*)

TABLE XVI
Shaves Per Can

50.4	Average
—39.8	Y*
30.4	Z*
—13.4	YZ*
95% CL =	± 4.8

TABLE XVII
Residue

7.5	Average
—0.1	Y
—0.1	Z
1.2	YZ
95% CL =	± 3.0

Interaction—Shaves Per Can

		Propellant Concentration	
		5%	9%
Propellant Type	FH	—28.4	—11.4
	LPG	— 2.0	41.8

TABLE XVIII
Foam Density

1 week	1 month
0.061 Average	0.064 Average
0.034 Y*	0.048 Y*
—0.033 Z*	—0.031 Z*
—0.008 YZ	—0.017 YZ*
95% CL = ± 0.008	95% CL = ± 0.004

Interaction—Foam Density (1 month)

		Propellant Concentration	
		5%	9%
Propellant Type	FH	0.048	0
	LPG	—0.017	—0.031

TABLE XIX
Foam Strength

1 week	5 months
42.1 Average	41.0 Average
6.0 Y*	—5.3 Y*
7.5 Z*	5.0 Z*
—3.5 YZ*	—2.8 YZ*
95% CL = ± 1.0	95% CL = ± 1.2

Interaction—Foam Strength (1 week)

		Propellant Concentration	
		5%	9%
Propellant Type	FH	1.0	5.0
	LPG	—8.5	2.5

Interaction—Foam Strength (5 months)

		Propellant Concentration	
		5%	9%
Propellant Type	FH	—3.8	—1.6
	LPG	—1.2	6.6

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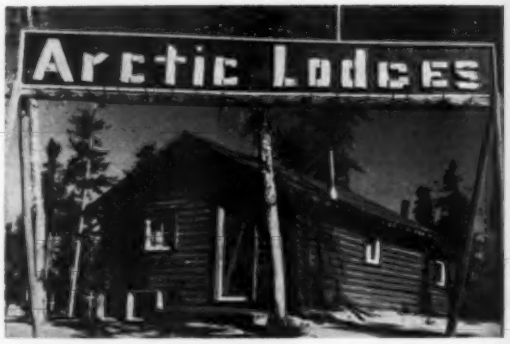
Memo to Purchasing:

We'd better see about getting those books advertised on page 64 for our research department.



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New Aerosol Patents

Listed below is a brief review of recent patents pertinent to the aerosol and related industries.

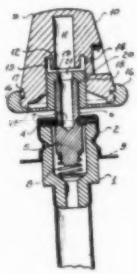
Complete copies of these patents may be obtained by writing to the Commissioner of Patents, U. S. Patent Office, Washington 25, D. C., and remitting 25 cents for each copy desired.

2,987,439. METHOD OF APPLYING AN AEROSOL TO THE EYE. Issued June 6 to Philip Wittlinger, Chicago, assignor to William Cooper & Nephews, Inc., Chicago.

In a method of administering a unit dosage of medication to the eye of an animal, the improvement of providing a body of liquid containing the medication in a propellant under superatmospheric pressure, said propellant being gaseous under ambient temperature and pressure, and, while still under superatmospheric pressure isolating a small portion of about 10 mg. to 1 g. of said liquid containing a unit dosage of medication, and then releasing said portion against the eye at ambient atmospheric temperature and pressure, 20% to 75% of said liquid being the medication and the balance of 25% to 80% being a polyhalogenated lower alkane refrigerant propellant, the medication comprising 0.01% to 1% methyl violet in an inert solvent solution, the ratio of medication to propellant being sufficient to effect the application of the unit dosage to the eye using less propellant than the amount which would lower the eye temperature more than 10° F. upon being so released against the eye.

•

2,989,217. METERING VALVE-OPERATING BUTTON FOR AEROSOL DISPENSER CONTAINERS. Issued June 20 to John Richard Focht, Yonkers, N. Y., assignor to Precision Valve Corp., Yonkers.



In a valve assembly for an aerosol dispenser having a dispensing outlet, and a valve for said outlet having a reciprocable, tubular valve stem, the improvement which consists of an operating button for said valve stem, said button comprising a substantially rigid superstructure having a metering chamber with an open bottom in the upper portion thereof, said superstructure having a recess with an open bottom at the lower portion thereof, an outlet nozzle leading from said recess, an upper shut-off seat surrounding the open bottom of said metering chamber, a flexible diaphragm disposed across the open bottom of said recess, a hub on said diaphragm having a socket therein to snugly receive said tubular valve stem, said socket having a passage establishing communication with said metering chamber with the tubular valve stem, an annular shut-off seat surrounding said passage opposed to, and normally spaced from, said upper, shut-off seat but engageable therewith through flexing of said diaphragm to isolate said metering chamber from said outlet nozzle when the superstructure is depressed to depress said valve stem to open said valve.

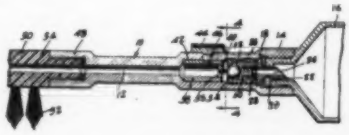
•

Design Patent 190,784. AEROSOL SPRAY DISPENSER. Issued June 27 to Ralph E. Kruck, Clinton, Conn., assignor to Metal Fabrications, Inc., Waterbury, Conn.

Design Patent 190,785. AEROSOL SPRAY DISPENSER. Issued June 27 to Ralph E. Kruck, assignor to Metal Fabrications, Inc.

Design Patent 190,786. AEROSOL SPRAY DISPENSER. Issued June 27 to Ralph E. Kruck, assignor to Metal Fabrications, Inc.

2,987,743. TOOTHBRUSH. Issued June 13 to Everett Capps, Los Angeles, Calif., assignor to Richard D. Martin, Los Angeles.



A self dispensing toothbrush comprising: a handle having a passage therethrough, bristle bearing means attached to one extremity of said handle having a passage therethrough communicating with said handle passage, a cartridge containing a mixture of toothpaste and gas under pressure attached to the other extremity of said handle, said other end having a cartridge attaching means for receiving said cartridge for communication with said passage, means in said passage end in said cartridge receiving extremity of said handle for puncturing said cartridge, a ball valve positioned on the opposite side of said puncturing means from said cartridge including an annular seat in said handle passage and a ball between said seat and said puncturing means and movable in the direction of flow of said toothpaste to seat in said valve seat and to close flow through said handle, means for opening said ball valve permitting flow through said handle.

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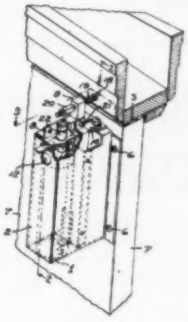
2,989,214. AUTOMATIC AEROSOL DISPENSING DEVICE. Issued June 20 to George J. Manheimer, 129 Rose Lane, New Hyde Park, N. Y.



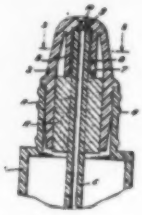
An automatic dispensing device comprising, in combination, an Aerosol cartridge having a metering nozzle, a formed hollow case which encloses said Aerosol cartridge, a releasable retaining means attached to said case for retaining said cartridge in a fixed relationship to said case, means for mounting said case to a door, a plunger having one end cup shaped for receiving and positioning said metering nozzle, an annular groove above said cup shaped end of said plunger, an L-shaped lever pivotally attached to the top of said case at the lever's fulcrum point, one end of said lever being pivotally attached to the other end of said plunger, a large headed screw mounted through a hole in the other end of said lever, a spring located about said screw and positioned between said screw head and said lever, an adjusting nut fastened to the threaded end of said screw and a stop arm having one end pivotally attached to the top of said case, said stop arm having a slot positioned near its other end for engaging said annular groove of said plunger to deactivate said plunger.

•

2,987,261. ATOMIZERS. Issued June 6 to Robert E. McCuiston, Greensboro, N. C., and Robert M. Fenner, New Canaan, Conn.

A spray device adapted to spray a mixture of particles of a finely divided liquid and volatilized aromatic oils which comprises an atomizing head having at one end

thereof an atomizing discharge orifice and at the other end cylindrical side walls, a tubular liquid supply member within said



side walls forming an annular air passage space therewith, said air passage and said liquid supply member joining at said atomizing discharge orifice and an air permeable member carrying a volatile aromatic oil within said annular space.

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Neverman to Shulton Post

The appointment of William H. Neverman as manager - wholesaler trade relations for the Toiletries Division has been announced by Shulton, Inc. He replaces John Hutchens, who has resigned.

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Trade Mark Registrations

Applications for registration of the following trademarks were published in recent issues of the *Official Gazette* of the U. S. Patent Office. In not all cases are there strictly aerosol trademarks, however, many of the products listed below come within the category of those for which a possible future use in aerosols is foreseen.

KONTROL, for hair spray and hair dressing. Filed Sept. 19 by Mark Allen Co., Detroit, giving first use July 8, 1960.

PANAROMA, for perfume. Filed July 26, 1960, by Parfums Ciro, Inc., New York, reporting first use July 5 of same year.

OSÉ, EXCITE, and ESPRIT DE NUIT, for perfume, colognes and other toilet goods. All three trademarks filed Oct. 6, 1959, by John Robert Powers Products Co., New York, with first use for each given as July 1, 1959.

COLOR-JET, for paints. Filed March 2, 1960, by Haas Chemical Corp., Scranton, Pa., with first use claimed for Dec. 17, 1959.

EASY-ON, for starch. Filed April 22, 1960, by American Home Products Corp., d.b.a. Boyle-Midway, New York, giving first use March 19 of same year.

MEADOW MIST, for air deodorant spray. Filed Nov. 3, 1959, by Trager Manufacturing Co., Scranton, Pa., reporting first use Feb. 1, 1957.

OFF!, for insect repellents. Filed April 1, 1960, by S. C. Johnson & Son, Inc., Racine, Wis., reporting first use on or about Nov. 1, 1956.

SML-Z-GUD, for room deodorant. Filed April 9, 1959, by Service Industries, Philadelphia, with first use given as March 24, 1959.

TRESSET, for hair spray. Filed May 26, 1960, by Neiman-Marcus Co., Dallas, Tex., with first use reported as Oct. 1, 1958.

TONNERE, for perfumes. Filed July 15, 1960, by Jean Jacques Martinat, New York, reporting first use June 8 of previous year.

DEBUTANTE INTERNATIONAL, for perfumes, colognes, and other cosmetics. Filed Oct. 3 by Daggett & Ramsdell, Inc., New York, giving first use Sept. 21, 1960.

SWEATER 'N SKIRT, for hair spray, cologne, and other cosmetic products. Filed Oct. 13 by Stanley Home Products, Inc., Westfield, Mass., giving first use Aug. 14, 1959.

SOACLENS, for cleansing solution for contact lenses. Filed Oct. 10 by Burton, Parsons Chemicals, Inc., Washington, D.C., with first use reported as Aug. 4.

PARA-CHEM, for dusting product having adhesive properties for improving the friction grip of the handles of athletic equipment by athletes' hands. Filed April 7, 1960, by Para-Chem Corp. of Ohio, Dover, O., giving first use in December, 1956.

PROOF, for pressurized insecticide, namely, moth spray. Filed Oct. 18 by M.F.A. Oil Co., Columbus, Mo., with first use given as Sept. 21.

WILD FLOWERS OF OLD ENGLAND, for hair spray, perfume and other cosmetics. Filed Oct. 21 by John N. McNath, Larchmont, N. Y., reporting first use July 15, 1942.

LOVE AFFAIR, for hair spray, perfumes and other cosmetics. Filed March 23, 1960, by Goya, Ltd., London, England, giving first use according to British registration dated March 13, 1958.

MF (in script), for colognes, perfumes and other cosmetics. Filed Oct. 20 by Max Factor & Co., d.b.a. Max Factor, Hollywood, Calif., with first use claimed for Sept. 28, 1959.

COLOR-MIST, for spray enamel. Filed May 31, 1960, by Chemsol Corp., Chicago, claiming first use for April of same year.

RUSTY, for preparation for dissolving rust. Filed June 24, 1960, by Cromit Products Corp., d.b.a. Albicrome Products, South Boston, Mass., giving first use March 10, 1960.

AWAY, for air deodorant. Filed Oct. 7 by Colgate-Palmolive Co., New York, reporting first use June 21, 1960.

SYRAPRIM, for antibacterial agent for treatment of infections. Filed Aug. 5, 1960, by Burroughs Wellcome & Co., Inc., Tuckahoe, N. Y., reporting first use June 27 of same year.

REZ-O-SOL, for composition used in the manufacture of protective coatings and adhesives. Filed Nov. 20, 1959, by Dover Chemical Corp., Dover, O., giving first use in April of previous year.

PRESCO, for start-promoting liquids in aerosol mixtures which are sprayed into air cleaners or air intakes of diesel and gasoline engines. Filed Sept. 21 by Precision Specialties Corp., Mineola, N. Y., claiming first use Jan. 28, 1959.

SINEPHYTON, for liquid antifungal agent for toe nails. Filed March 7, 1960, by GDK Laboratories, Inc., Morton Grove, Ill., assignee of Gerald D. Kelder, d.b.a. GDK Sales, Morton Grove, Ill., reporting first use Nov. 15, 1959.

SEARS, for chemicals and chemical compositions, including window anti-fog preparations, household deodorants, animal disinfectants, fire extinguishing chemicals, fungicides, herbicides, insecticides, animal and insect repellents, and rust removing and preventing compounds. Filed May 12, 1960, by Sears Roebuck & Co., Chicago, giving first use on or about Jan. 15 of previous year.

ASTRA, for pharmaceutical preparations, including topical anesthetics and anesthetics prepared as infusion and sprays. Filed Aug. 26, 1959, by Astra Pharmaceutical Products, Inc., New York, reporting first use Aug. 22, 1946.

A Correction

In the July issue of Aerosol Age the street address of Fleuroma, Inc., was incorrectly given. It should have read 43-23 37th Ave., Long Island City 1, New York.

CLASSIFIED ADVERTISING

Address all classified replies to Box Number c/o *Aerosol Age*, PO Box 31, Caldwell, N. J. Rates for "Help Wanted" advertisements are 20¢ per word; minimum charge $3.00. Rate for individuals seeking employment is 5¢ per word, $1.00 minimum. Advertisements of new machinery, products and services accepted at the rate of $10.00 per column inch. Minimum space, one inch. Copy closing date, 10th of preceding month. *Checks must accompany all orders.*

SITUATIONS WANTED:

Chemist-Chemical Engineer. Experienced in quality control as analytical chemist; directed plant operation of chemical processes. Can set up small or large laboratory, check and/or supervise chemical control within plant; or do routine laboratory work. European education, fluent in six languages, and is 36 years old. Box 261, Aerosol Age.

AEROSOL CHEMIST: Extensive experience in aerosol product development, formulations, evaluation and packaging. Thoroughly familiar with all factors relative to pressurized products. Heavy on chemical specialties and cosmetics. Customer contract service. Fluent Spanish. Supervisory experience. Address Box 255, c/o Aerosol Age.

AEROSOL CHEMIST: Three years experience in analytical methods development and formulation development, with special emphasis on propellant systems. Supervisory experience in quality control and development laboratories. Desire management position in research or production. Resumes on request. Address Box 256, c/o Aerosol Age.

HELP WANTED:

SALESMAN

Unusual sales opportunity open in Midwest territory with major insecticide raw material supplier. Must have knowledge of agricultural or household insecticide field. Salary open. Box 260, Aerosol Age.

AEROSOL PRODUCTION SUPERVISOR — Previous experience in the complete supervision of aerosol packaging line. Midwest location. Start to $10,000. Write Box 258, c/o Aerosol Age.

EUROPEAN SALES. Senior Marketing Executive (39), Linguist, based London, widest practical experience with leading international company in Cosmetic and Toiletries sales, advertising, etc. throughout Europe desires change. Address Box 259, c/o Aerosol Age.

MANUFACTURERS AGENTS wanted to sell a complete line of aerosol overcaps. Agent must have good contacts in cosmetic, drug and pharmaceutical field. Full particulars including number of men, lines and territories served, first letter. Address Box 257, c/o Aerosol Age.

Manufacturers Representative Wanted by manufacturer of fragrances, flavors, and industrial odorants. Several territories open for individual calling on pharmaceutical, cosmetic, confectionery, baking, and industrial trades. Box 262, Aerosol Age.

SALESMAN-MANAGERIAL POTENTIAL. Knowledgeable in contract aerosol packaging, also private label sanitary supply field. Willing to work and grow with medium-size expanding aerosol filler planning to do $2 million in sales in 1963. East Coast location. Send complete resume and salary requirements in first letter to Box 263 Aerosol Age.

Establishes Aerosol Display

The Metal Box Co., Ltd., 37 Baker Street, London W. 1, a leading British producer of tinplate cans and aerosol valves, has set up a display of aerosol packages from all over the world at its London showrooms. Although admittedly far from complete, the exhibit is reported to contain a good representation from Britain and the United States.

Packaging News, British trade publication, reports that in the United Kingdom the leading aerosol product category is household products, with some 22 different products. Next come industrial and automotive products, with some 21 items; veterinary, with 18; and cosmetics, with 13.

•

Chemical Congress Plans Program

The complete program has been issued for the 33rd International Congress of Industrial Chemistry, which is scheduled to be held in Toulouse and Bordeaux, France from Sept. 28 to Oct. 8. The program includes papers on compressed and flammable gases, plastics, and other subjects. Further information is available from the Secretary, Society of Industrial Chemistry, Bourse Maritime, place Laine, Bordeaux.

Bon Ami Names Foreign Agency

Overseas Management Service, Inc., has been named to operate the International Division of Bon Ami Co., New York, in an effort to expand its business abroad. According to Ralph A. Schwaikert, Bon Ami president, the company has not shipped its original coke product or its new products overseas in quantity since World War II, but today they are being made and marketed in Australia, Canada, and Mexico. Also manufacturing arrangements have recently been concluded in Italy and Colombia.

In the photograph above, Mr. Schwaikert (right) confers with Gordon Reese, manager of the Bon Ami account for Overseas Management Services. Mr. Reese has had an extensive background in the pharmaceutical and chemical industries.

•

Vapona Label Gets Approval

Shell Chemical Company, manufacturer of VAPONA insecticide, announced that the U. S. Dept. of Agriculture has approved "Vapona" as a pressurized spray for use by the general public in homes, restaurants, food processing plants, theatres, industrial plants, warehouses, etc.

Vapona is a recently developed insecticide which is said to be effective in controlling cockroaches, silverfish, spiders, ants, and many kinds of flying insects including flies, mosquitoes, wasps, gnats, and moths. Because of its volatility it seeks out its victims by penetrating the cracks and crevasses where crawling insects hide.

The label just approved by the U.S.D.A. is for a 0.5% pressurized spray to be applied as a coarse spray to localized areas which insects may infest.

Aerosol Shave Creams

(*From Page* 81)

effect resulting from fluorinated hydrocarbon concentration was greater than the effect of liquefied petroleum gas concentration.

Considering foam strength data after a one week storage period, higher foam strength resulted when the fluorinated hydrocarbon blend was used, but the concentration differential was greater when liquefied petroleum gas was used. At five months storage, there was little effect from fluorinated hydrocarbon concentration. Concentration effect was still present from the liquefied petroleum gas. At 9%, the liquefied petroleum gas exhibited superior foam strength characteristics.

The fluorinated hydrocarbon blend produced longer drying times. Increasing the concentration of either propellant greatly reduced drying time.

Analysis of the data on the bubble size showed that there was no effect of propellant type or concentration.

For comparative purposes, data on typical commercial creams are given in Table XXIII.★

TABLE XX
Drying Time

Minutes
23.2 Average
4.0 Y*
—19.3 Z*
—2.5 YZ
95% CL = ± 1.9

TABLE XXI
Bubble Size

Log % difference as dispensed, ten minutes 1 week
1.520 Average
—0.256 Y
—0.134 Z
0.039 YZ
95% CL = ± 0.500

TABLE XXII
Summary of Effect of Variables in the Comparison of Fluorinated Hydrocarbons

Variable	Designation	Shaves Per Can	Residue	Foam Density 1 Week	Foam Density 1 Mo.	Foam Strength 1 Week	Foam Strength 5 Mos.	Drying Time	Bubble Size
Soap concentration	A	+				+	+		
Acid ratio	B	—				+	+		
Free fatty acid concentration	C	—						—	
Polyol type	D								
Polyol concentration	E	—	—			+	+	+	
Fluorinated hydrocarbon type	F	+							
Fluorinated hydrocarbon concentration	G		—	—	—	+	+	—	

Key: + change from low to high level has positive effect.
— Change from low to high level has negative effect.

References

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TABLE XXIII
Data on Commercial Aerosol Shaving Creams Purchased 1959

Brand	Weight Charge Ounces	Weight Charge Grams	Dispensation pH 10% in H_2O	Dispensation Shaves /Can	Dispensation Residue in Can	Dispensation % of Claimed Charge	Foam Density	Foam Strength	Drying Time	Bubble Size As Dispensed Smallest	Bubble Size As Dispensed Largest	Bubble Size As Dispensed Most Frequent Size	Bubble Size Ten Minutes Smallest	Bubble Size Ten Minutes Largest	Bubble Size Ten Minutes Most Frequent Size
A	6	170.1	7.9	37	5.5	3.2	0.059	43.5	5.3	0.019	0.160	0.060	0.015	0.160	0.103
B	6	170.1	10.6	34	8.5	5.0	0.066	52.2	83.0	0.011	0.120	0.025	0.015	0.120	0.040
C	6¼	177.2	8.2	38	11.7	6.6	0.069	33.8	82.3	0.013	0.110	0.056	0.017	0.120	0.072
D	6¼	177.2	10.7	40	4.1	2.3	0.078	35.8	93.0	0.011	0.120	0.060	0.008	0.240	0.039
E	6¼	177.2	10.5	43	1.4	0.8	0.079	45.0	44.0	0.010	0.063	0.035	0.011	0.100	0.040
F	6¼	177.2	8.0	31	9.6	5.4	0.091	44.5	81.5	0.012	0.087	0.040	0.012	0.169	0.056
G	6¼	177.2	8.0	36	2.7	1.5	0.074	33.0	50.5	0.011	0.189	0.062	0.019	0.147	0.090
H	6	170.1	7.9	35	15.8	9.3	0.063	40.0	8.3	0.012	0.160	0.063	0.012	0.188	0.097
I	6¼	177.2	10.6	40	18.9	10.7	0.062	12.0	—*	0.012	0.160	0.056	0.016	0.173	0.095
J	6	170.1	8.5	38	6.2	3.6	0.062	34.3	6.8	0.011	0.212	0.036	0.017	0.217	0.049
Range	Lowest	170.1	7.9	31	1.4	0.8	0.059	12.0	5.3	0.010	0.063	0.025	0.008	0.100	0.039
	Highest	177.2	10.7	43	18.9	10.7	0.091	52.2	93.0	0.019	0.212	0.063	0.019	0 240	0.103

*Wet coarse foam, no body.

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O-I in New Plastic Venture

Owens-Illinois Glass Co., Toledo, and National Distillers & Chemical Corp., New York, last month formed a joint company, called National Petro Chemicals Corp. to make linear polyethylene. The new company will own the National Distillers plant at Houston, Tex., which is scheduled to go into production late next year with a capacity of about 60 million pounds of high density polyethylene per year. The U. S. Industrial Chemicals Division of National Distillers will operate the plant, but Owen-Illinois will take a substantial portion of the production.

•

Mennen Appoints Two

The Mennen Co., Morris Plains, N. J., has named Sylvester J. Cleary merchandising manager and has moved Donald L. Gallagher to the post of marketing coordinator.

U. S. Aerosols to Britain

American brands of aerosol products will be included in a display of American household goods shown at the new U. S. trade center, 57 St. James' Street, London, England. The products are from 60 member companies of the National Housewares Manufacturers' Association, and include a non-skid spray for rugs, some household cleaners, and other products.

Spray Patterns

ALTHOUGH nothing definite has appeared as yet, there are strong indications that New York City is considering banning *all* flammable propellants in aerosol products offered for sale in that city. Basing its findings on flammability tests developed in its own central testing laboratories, the N. Y. Fire Department is expected to make part of the City Code some language aimed specifically at *preventing* use of flammable aerosol propellants. As was reported in this column last month, the City has already banned such propellants for use in hair sprays and paints and similar coatings, but the new rules are expected to be even more significant for shave cream, insecticide and other aerosol marketers. As this issue goes to press (July 26) a special CSMA meeting has been called to examine the situation and determine the association's approach at a formal hearing to be sought before publication of the new rule.

* * *

In the face of some of the fiercest opposition to any FDA-sponsored measure in recent memory, the August 1 deadline for the Federal Hazardous Labeling Bill has been pushed back to February 1, 1962. This news is from the *Federal Register* of July 21.

* * *

Fred Lodes, CSMA treasurer and president of Lodes Aerosol Consultants, will be the official representative of the CSMA at the Third International Aerosol Congress in Lucerne.

* * *

The next plastic material to come under serious study as an aerosol container material may well be polystyrene, one of the lowest-priced plastics currently used quite extensively for cover caps.

* * *

Acrolite Products, Inc., Rahway, N. J., is reported to have developed a piston container utilizing a standard seamed 16-ounce can. It is claimed that the new container will dispense a full pound of any product of heavy viscosity.

* * *

The British Aerosol Manufacturers Association has accepted an invitation from the Federation of European Aerosol Associations to organize the 1962 International Aerosol Congress. This should bring the next Congress, to be held in Britain, in closer geographical reach to those U. S. industry people who wish to attend.

* * *

In Japan, cosmetics have become a political issue with the June announcement that the Socialist Party has decided to begin marketing hair cream, hair tonic, face lotion, and other cosmetics. To be sold at cut rate, the cosmetics are rumored to be the Socialists' way of winning the women's vote, but spokesmen for the party suggest it is just the party's way of giving the people what they want. First reports seem to indicate the labels *will not* bear political slogans.

* * *

Eugene F. Mace, S. C. Johnson aerosol chemist who expounded so well on "House and Garden Insecticides" at the May CSMA meeting in Chicago, is the "star" of a television commercial for Johnson's "Off" insect repellent. In two separate "takes" he is shown submitting his arm to a cage of mosquitoes, once before and once after it has been sprayed with "Off". It's all very effective advertising.

* * *

Speaking of television, we think there has been more good aerosol advertising shown this summer than ever before. This particularly applies to insecticides and repellents, which seem to be advertised more and more during prime evening time. The radio "spot advertisements" also seem more effective.

"Now there's what I call progress!"

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Pyrenone, Fairfield's own piperonyl butoxide and pyrethrins combination fortifies new DRIANONE. It gives this highly effective residual insecticide immediate and positive insect control. It provides the fast knockdown and kill that customers prize—the action that sells.

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Together, this proved silica dust and Pyrenone form a top team. They form DRIANONE—a truly safe insecticide base proved effective against all crawling insects, resistant or otherwise. Consult your Fairfield representative today for other DRIANONE bases, Dri-Die, and Pyrenone concentrates.

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